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WILDLIFE REVIEW

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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor.

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NATURAL RESOURCES & CLIMATE

Stewart, Robert E., and Harold A. Kantrud. CLASSIFICATION OF NATURAL PONDS AND LAKES IN THE GLACIATED PRAIRIE REGION. *U.S. Fish Wildl. Serv. Resource Publ.* 92. iv + 57 p., 3 figs., 31 pls. 1971. For sale at 65¢ by Supt. Documents, GPO, Washington, D.C. *WR 142: 2*

Contents: Vegetational zones in prairie ponds and lakes, Phases of the vegetational zones, Plant species composition and differences in salinity of surface water, Descriptions of the vegetational zones, Major classes of natural ponds and lakes, Subclasses of natural ponds and lakes, Cover types in natural ponds and lakes, Application of the classification system, Synoptic outline of the classification system, and Comparison of two classification systems.

SOILS

Arms, Fred S., and others. SOIL SURVEY OF NELSON COUNTY, KENTUCKY. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 106 p., 17 figs. + single-fold maps based on aerial photos and bound in. Mar. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 142: 2*

Hazzel, Orville L. SOIL SURVEY OF WALWORTH COUNTY, WISCONSIN. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 107 p., 10 figs. + single-fold maps based on aerial photos and bound in. Feb. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 142: 2*

Larsen, Lynn S., and others. SOIL SURVEY OF ARAPAHOE COUNTY, COLORADO. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 78 p., 18 figs. + single-fold maps based on aerial photos and bound in. Mar. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 142: 2*

Matthews, Earle D., and others. SOIL SURVEY OF KENT COUNTY, DELAWARE. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 66 p., 16 figs. + single-fold maps based on aerial photos and bound in. Apr. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 142: 2*

Preator, Rodney E., and others. SOIL SURVEY OF BENT COUNTY, COLORADO. *U.S. Dep. Agr. Soil Conserv. Serv. Soil Surv.* i + 72 p., 11 figs. + single-fold maps based on aerial photos and bound in. Jan. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 142: 2*

GENERAL CONSERVATION

Campbell, A. C. CONSERVING WILD LIFE IN BOTSWANA. *African Wildl.* 23(2): 161-166, illus. 1969. [From Biol. Abstr. 52(7), 1971.] *WR 142: 3*

Čeřovský, J., and T. Pritchard. IUCN ELEVENTH TECHNICAL MEETING / PAPERS AND PROCEEDINGS / NEW DELHI, INDIA / 25-28 NOVEMBER 1969 / VOLUME IV / FIFTH SESSION: COMMISSION ON EDUCATION "EDUCATION WORKSHOP" / ENVIRONMENTAL CONSERVATION EDUCATION AMONG POPULATIONS OF RURAL AND WOODLAND AREAS. *IUCN Publ. New Ser.* no. 20. 156 p. 1971. In English or French with summaries in French or English. Published by and obtainable from IUCN, 1110 Morges, Switzerland. *WR 142: 3*

Includes the following papers: *Final report from the working meeting on problems of environmental conservation in India*, J. Goudswaard; *Environmental conservation education in Indian schools*, S. Doraiswami and V. M. Galushin; *Conservation education in India*, Z. Futehally; *Environmental education: its relevance to the problems of rural areas in north-west Europe*, T. Pritchard; *Conservation education in rural districts of the U.S.S.R.*, Kh. P. Mirimanian and N. A. Gladkov; *Le travail éducatif en matière de conservation de la nature dans les régions rurales en Pologne* [*Nature conservation in the rural regions of Poland*], T. M. Szczesny; *Conservation education of the rural population by the Nature Conservancy in the German Democratic Republic*, L. Bauer; *Education en conservation de la nature en Québec* [*Education and nature conservation in Quebec*], M. Maldague; *Conservation education and extension in tropical rural Latin America, with special reference to Venezuela*, A. Eichler; *Environmental education in relation to national parks and rural education in an urbanizing culture*, Wayne Miller; *Supplementary note on the educational program of the U.S. National Wildlife Federation*, T. L. Kimball; *On some problems of conservation education in biology teaching in Japan*, J. Shimoizumi; *Ecological conservation education in Ethiopia*, E. K. Urban and W. J. Murphy; *In contemplation of the global wildlife conservationist*, H. Elliott McClure; *The history of conservation education in central Africa*, D. Morgan; and *Nature conservation education in Indonesia*, H. Basjarudin and R. C. Tarumingkeng.

Numata, M. ECOLOGICAL BACKGROUND AND CONSERVATION OF JAPANESE ISLANDS. *Micronesica* 5(2): 295-302. Dec. 1969. *WR 142: 3*
[Chiba Univ., Chiba City, Japan.]

Perry, R. CONSERVATION PROBLEMS IN THE GALAPAGOS ISLANDS. *Micronesica* 5(2): 275-281. Dec. 1969. *WR 142: 3*
[Estacion Charles Darwin, Galapagos.]

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Harshbarger, Thomas J., and Carrol J. Perkins. EFFECT OF SHADE ON GROWTH AND SEED PRODUCTION OF PARTRIDGE-PEA. *J. Wildl. Mgmt.* 35(2): 382-385. Apr. 1971. *WR 142: 3*

[SE Forest Exp. Sta., Tifton, Ga.] Abstract: This study isolated shade as a single ecological factor and measured its influence on the growth and seed production of partridge-pea *(Cassia nictitans)*, an annual plant whose seeds are important to quail *(Colinus virginianus)* and turkeys *(Meleagris gallopavo)*. Plants grown under moderate shade (30 or 55%) produced more dry matter and seed and had greater dimensions than plants in full sun or dense shade (92%). Optimum production of seed occurred under 30% shade. Dense shade drastically curtailed productivity. Seed germination and initiation of flowering and fruiting were not affected by shade. Results can guide modification of timber stands to enhance quail habitat.

PLANTS--FLORAS, COMMUNITIES, TAXONOMY

Weseloh, D. Vaughn, and Robert T. Brown. PLANT DISTRIBUTION WITHIN A HERON ROOKERY. *Amer. Midland Natur.* 86(1): 57-64, 2 figs. July 1971. *WR 142: 4*
[Univ. Calgary, Calgary, Alberta, Canada.]

PLANTS--FOREST SURVEYS

Ohmann, Lewis F., and Robert R. Ream. WILDERNESS ECOLOGY: A METHOD OF SAMPLING AND SUMMARIZING DATA FOR PLANT COMMUNITY CLASSIFICATION. *U.S. Forest Serv. Res. Pap.* NC-49. 14 p., 10 figs. 1971. *WR 142: 4*
[North Central Forest Exp. Sta., St. Paul, Minn.] A flexible sampling scheme is presented that may be used in surveying and classifying plant communities of forest lands. Methods, data sheets, and computer summarization printouts are included.--From abstr.

U.S. Forest Service. FORESTRY RESEARCH HIGHLIGHTS 1970. *Rocky Mountain Forest & Range Exp. Sta.* iv + 51 p., illus. [1971.] *WR 142: 4*
With a section on wildlife habitat studies.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Boguleanu, Gh., Anca Zamfirescu-Precupetu, and Eleonora Erban. CERCETARI ASUPRA DINAMICII FAUNEI DIN PLANTATIILE FORESTIERE SI SOLELE CULTIVATE DE LA VALUL LUI TRAIAN (II). [DYNAMICS OF THE FAUNA OF FOREST SHELTER BELTS AND NEIGHBORING PLOTS AT VALUL TRAIAN (DOBRUDJA).] *Comun. Zool.* 1969: 137-150, illus. 1969. [From Biol. Abstr. 52(6), 1971. In Romanian with Russian and English summ.] *WR 142: 4*
[Soc. Stiint. Biol., Bucharest, Romania.]

Bolivar, Javier Castroviejo. PREMIÈRES DONNÉES SUR L'ÉCOLOGIE HIVERNALE DES VERTÉBRÉS DE LA CORDILLIÈRE CANTABRIQUE. [PRELIMINARY PAPER ON THE WINTER ECOLOGY OF VERTEBRATES IN THE CANTABRIAN MOUNTAINS.] *Alauda* 38(2): 126-149, illus. 1970. [From Biol. Abstr. 52(6), 1971. In French with Spanish and English summ.] *WR 142: 4*
[Inst. Acosta Zool., Cons. Super. Invest. Cient., Madrid, Spain.]

Butler, W. H. A SUMMARY OF THE VERTEBRATE FAUNA OF BARROW ISLAND, WESTERN AUSTRALIA. *Western Australia Natur.* 11(7): 149-169. 1970. [From Biol. Abstr. 52(8), 1971.] *WR 142: 4*

Clough, Garrett C., and George Fulk. THE VERTEBRATE FAUNA AND THE VEGETATION OF EAST PLANA CAY, BAHAMA ISLANDS. *Atoll Res. Bull.* no. 138. 17 p., 7 [figs.]. 16 Feb. 1971. *WR 142: 4*
[Univ. Oslo, Oslo, Norway.] Three lizard species, 37 spp. of birds, and eight plant communities were recognized and recorded.

Guilday, John E., and Paul W. Parmalee. THIRTEEN-LINED GROUND SQUIRREL, PRAIRIE CHICKEN AND OTHER VERTEBRATES FROM AN ARCHEOLOGICAL SITE IN NORTHEASTERN ARKANSAS. *Amer. Midland Natur.* 86(1): 227-229. July 1971. *WR 142: 4*
[Carnegie Mus., Pittsburgh, Pa.] Abstract: Skeletal remains of 13-lined ground squirrels *(Spermophilus tridecemlineatus)* dating from A.D. 900 to A.D. 1300 were found associated with other vertebrate fauna in northeastern Arkansas. This find indicates a range adjustment of some 200 miles after 900 A.D.

Hendricks, Barbara J., editor. UNITED STATES INTERNATIONAL BIOLOGICAL PROGRAM / ANALYSES OF ECOSYSTEMS PROGRAM / INTERBIOME ABSTRACTS. *Colo. State Univ. Natur. Resource Ecol. Lab.* 1971. *WR 142: 4*
The results of work in progress from the International Biological Program (Colo. State Univ., Fort Collins) are being made available through a computer based abstract series. The abstracts are taken from the study group's published research and data sets, and may represent either progress reports or completed

studies. The contributing groups, or "biomass" (Grassland, Desert, Deciduous Forest, Coniferous Forest, and Tundra) include some studies of interest to wildlife research. Copies of the series are available from the Natural Resource Ecology Laboratory, Colorado State University. Three issues of the abstract publication are available, with the following papers pertaining to wildlife: ABSTRACTS 1(1): *Food habits of North American hares; The role of small herbivorous mammals in the functioning of the grassland ecosystem; Birds in grassland ecosystems; The role of diseases and parasites in a grassland ecosystem; A preliminary bird population dynamics and biomass model; Summary report on initial small-herbivorous-mammal modeling efforts; Progress report, IBP antelope project; Dietary and energy relationships of jackrabbits at the Pawnee site; A study of rodents in northeastern Colorado; Jackrabbit demographic and life history studies, Pawnee site; Diurnal raptors on the Pawnee site; Some comparisons of feeding ecology of four species of owls in north-central Colorado; Avian distribution and population fluctuations at the Pawnee site; Summer ecology of the lark bunting; Assimilation rates of small mammal herbivores; Identification of insects and density determinations of the stomach contents of small mammals;* Clostridium perfringens *enterotoxemia in hand-reared antelope; Roosting by barn and great horned owls; Small mammal mark-recapture live trap;* and *Reptile density.* ABSTRACTS 1(2): *Productivity and availability of desert plants as food for desert mammals; Reproductive cycles of small desert mammals; Monitoring small mammal populations; Studies of feeding niches (foods eaten, relative amounts of each food, seasonal preferences) and reproductive cycles of* Perognathus amplus; *The importance and role of amphibians and reptiles in grassland ecosystems; Diurnal raptors of the Pawnee site in northeastern Colorado; Feeding ecology of four sympatric owls in Colorado;* and *Avian distribution and population fluctuations on the shortgrass prairie of north central Colorado.* ABSTRACTS 1(3): *Bridger site small mammal live trap grid data; The chromogen method applied to determining digestion in wild jackrabbits; The feeding regime of granivorous birds in shortgrass prairie in Colorado; Avian distribution and population fluctuations on the shortgrass prairie of north central Colorado; Avian populations and patterns of habitat occupancy at the Pawnee site, 1968-1969;* and *Forage removal by jackrabbits on midgrass ranges.*

Johnson, William Warren. THE RESIDENT MAMMAL AND BIRD POPULATIONS OF A SAND PRAIRIE AND FOREST NEAR BATH, ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(3): 234-239. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 5*
[Univ. Ill., Champaign.]

WILDLIFE--POLLUTION

Barrier, Martin James. PESTICIDE RESIDUES IN SELECTED TISSUES OF THE WHITE-TAILED DEER, *ODOCOILEUS VIRGINIANUS*, L., IN CALHOUN COUNTY, SOUTH CAROLINA. *Ph.D. thesis, Clemson Univ.* 82 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 5*

Only DDT and metabolites were detected. Two residue peaks were evident, one in early spring, and another corresponding to the spray season in late summer. The highest mean residues (1.76 ppm) were found in the fat, followed by brain, feces, rumen contents, liver, loin muscle, kidney and rump muscle in that order. The highest total DDT residue (6.67 ppm) recovered in the fat of a deer collected at the height of the spray season did not exceed the maximum tolerance limit (7.0 ppm) presently established for beef by the Food and Drug Administration. An average of 0.14 ppm of DDT was found in the fat of deer from an isolated area with no known history of DDT use. There was no indication of bioaccumulation of DDT residues from one year to the next. Consequently, the existing low residues are not believed to be detrimental to the deer and are not believed to present a potential health hazard in regard to human consumption of deer.--From abstr.

Berding, Hans-Henning. ÜBER DAS AUFTRETEN VON SALMONELLEN NACH DER OLPEST IN ENGLAND. [ON THE OCCURRENCE OF SALMONELLA AFTER GREAT AMOUNTS OF OIL WERE SPILLED IN THE OCEAN IN ENGLAND.] *Gesundheitsw. Desinfek.* 60(3): 43-44. 1968. [From Biol. Abstr. 52(9), 1971. In German.] *WR 142: 6*
[Wildenbruchstr. 2, Hannover, Germany.]

Blumenbach, Dedo. PESTIZIDE IN DER UMWELT / EINE BIBLIOGRAPHIE ÜBER NEBENWIRKUNGEN, RÜCKSTÄNDE UND SCHUTZMASSNAHMEN. [PESTICIDES IN THE ENVIRONMENT / A BIBLIOGRAPHY ON SIDE-EFFECTS, RESIDUES, AND CONTROL.] *Mitt. Biol. Bundesanst. Land- Forstwirtsch. Berlin-Dahlem.* 146 p. 1971. In German with table of contents in English. *WR 142: 6*
Major categories of contents: Review articles, Pesticide discussion, Side-effects on nature and man, Residues in the environment and in feed, and Diminuation of pesticide damage. This classified bibliography is for the period 1965-1970.

Bourne, W. R. P. OIL POLLUTION AND BIRD CONSERVATION. *Biol. Conserv.* 2(4): 300-302. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 6*
[British Mus., London, England.]

Cecil, Helene C., Joel Bitman, and Susan J. Harris. EFFECTS OF DIETARY p,p'-DDT AND p,p'-DDE ON EGG PRODUCTION AND EGG SHELL CHARACTERISTICS OF JAPANESE QUAIL RECEIVING AN ADEQUATE CALCIUM DIET. *Poultry Sci.* 50(2): 657-659, 1 fig. Mar. 1971. *WR 142: 6*
[Agr. Res. Serv., Beltsville, Md.]

Creger, C. R., and L. F. Kybena. THE EFFECT OF DIETARY CHOLINE CHLORIDE AND INOSITOL ON THE DEPLETION RATE OF HEPTACHLOR FROM BIRDS. *Bull. Environ. Contam. Toxicol.* 6(3): 255-262. May-June 1971. *WR 142: 6*
[Texas A&M Univ., College Station.] Summary: Two trials were conducted utilizing a total of 160 one-week-old unsexed Japanese quail *(Coturnix c. japonica)* to determine the effect of choline chloride and inositol supplementation on the depletion rate of heptachlor. Supplementation of the diet with a combination of choline chloride and inositol was effective in reducing the heptachlor residue in the tissue samples studied. The metabolism of heptachlor appears to occur in the liver with subsequent elimination of the residue and not deposition in body tissue. The addition of 10% vegetable oil to the basal diet caused significant increase in the heptachlor residue in the tissue samples analyzed.

Curnov, Richard Dennis. KINETICS OF 65-ZINC IN THE MALLARD. *Ph.D. thesis, Colo. State Univ.* 114 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 6*
A series of experiments was conducted to determine the influence of certain factors on the kinetics of ^{65}Zn in the mallard duck *(Anas platyrhynchos)*. Factors tested included the age and sex of the mallard; the season of year (fall and spring); egg production; and feather molt. Associated with the investigation were experiments to study the accumulation of ^{65}Zn on external tissues of the mallard from water containing ^{65}Zn and the distribution and concentration of ^{65}Zn in the tissues of the mallard over time.

Dahlgren, Robert B., and Raymond L. Linder. EFFECTS OF POLYCHLORINATED BIPHENYLS ON PHEASANT REPRODUCTION, BEHAVIOR, AND SURVIVAL. *J. Wildl. Mgmt.* 35(2): 315-319. Apr. 1971. *WR 142: 6*
[S. Dak. Coop. Wildl. Res. Unit, Brookings.] Abstract: Cock pheasants *(Phasianus colchicus)* were given single capsules weekly containing either 0 or 25 mg polychlorinated biphenyls (PCB) for 17 weeks in the spring of 1970. Hen pheasants mated to these cock groups were given single capsules weekly containing 0, 12.5, or 50 mg PCB (Aroclor 1254). Among groups receiving PCB, egg production was depressed significantly ($P<0.05$), and the number of eggs that were pipped but not hatched was increased significantly ($P<0.05$). Even though weekly weight

changes of hens, fertility and hatchability of eggs, mortality of adults, and eggshell thickness did not appear to be affected by PCB, total reproductive success was depressed. Behavior, on a visual cliff, of chicks hatched from hens given 50 mg weekly was significantly different ($P<0.01$); more of them jumped to the visually deep side or made no choice of sides than chicks from other groups. Mortality of chicks from hatching to 6 weeks of age was significantly greater ($P<0.01$) in the offspring of hens receiving 50 mg PCB weekly, and surviving chicks of this group were significantly lighter ($P<0.05$) in weight than other groups at 6 weeks of age.

Dustman, E. H., W. E. Martin, R. G. Heath, and W. L. Reichel. MONITORING PESTICIDES IN WILDLIFE. *Pesticides Monitoring J.* 5(1): 50-52. June 1971. *WR 142: 7*

[Patuxent Wildl. Res. Center, Laurel, Md.] "The purpose of this report is to update and redescribe the wildlife monitoring program [of the Bureau of Sport Fisheries and Wildlife] and briefly review accomplishments." An earlier report is listed under Johnson *et al.* in *WR 130: 6*. Currently starlings, duck wings and eagles are monitored for residual pesticides.

Fimreite, N., and L. Karstad. EFFECTS OF DIETARY METHYL MERCURY ON RED-TAILED HAWKS. *J. Wildl. Mgmt.* 35(2): 293-300, 6 figs. Apr. 1971. *WR 142: 7*

[Univ. Western Ontario, Guelph, Canada.] Abstract: Six groups of 1-year-old red-tailed hawks (*Buteo jamaicensis*) of three birds each were fed chicks contaminated with methyl mercury at three different levels (3.9, 7.2, and 10.0 ppm of mercury were found in their livers, respectively). The experimental feeding periods were 4 or 12 weeks. Mortality occurred in the groups on the most contaminated diets after an exposure period of 1 month or more, the signs of poisoning prior to death being essentially neurological. The mercury levels in the livers of hawks that succumbed to mercury poisoning were about 20 ppm. These hawks, and those that survived on the two most heavily contaminated diets, showed pathological changes. The most consistent changes were swelling of axons of myelinated nerves in the spinal cord, with dilatation of myelin sheaths and loss of myelin.

Foehrenbach, Jack, Ghulam Mahmood, and Dennis Sullivan. DDT RESIDUES IN EGGS OF MARSH-INHABITING BIRDS. *N.Y. Fish & Game J.* 17(2): 126-127, 1 fig. July 1970. *WR 142: 7*

Clapper rail, marsh hawk, and black-crowned night heron.

Greenberg, Robert E., and William R. Edwards. INSECTICIDE RESIDUE LEVELS IN EGGS OF WILD PHEASANTS IN ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(2): 136-147. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 7*

[Ill. Natur. Hist. Surv., Urbana.]

Hall, J. E., Yvonne A. Greichus, and K. E. Severson. EFFECTS OF ALDRIN ON YOUNG PEN-REARED PHEASANTS. *J. Wildl. Mgmt.* 35(3): 429-434, 1 fig. July 1971. *WR 142: 7*

[S. Dak. State Univ., Brookings.] Abstract: Three levels of encapsulated aldrin (0.5, 1.0, and 1.5 mg) were administered weekly to pen-reared pheasants (*Phasianus colchicus*) from 5 to 11 weeks of age, or until birds were sacrificed, to determine effects on growth and to ascertain residue levels in brains and bodies at various periods, after treatment was initiated. Growth of pheasants between 5 and 21 weeks of age was depressed ($P<0.01$) by administration of weekly aldrin dosages of 1.0 and 1.5 mg. Dieldrin values in brains and bodies increased proportionately with treatment levels during the period of administration, whereas aldrin did not increase. Ten weeks after treatments were terminated, brain and body levels of dieldrin from birds surviving the experiment were comparable to those of controls. Administration of 1.5 mg of aldrin in a single dosage caused the death of 11 of 22, 5-week-old pheasants within 48 hours. Mean levels of aldrin plus dieldrin in these 11 birds were: brains, 2.72 ppm (2.13-4.25 ppm range); bodies, 2.38 ppm (1.45-4.35); and feathers, 0.81 ppm (0.56-1.43).

Hull, A. C., Jr. EFFECT OF SPRAYING WITH 2,4-D UPON ABUNDANCE OF POCKET GOPHERS IN FRANKLIN BASIN, IDAHO. *J. Range Mgmt.* 24(3): 230-232, 3 figs. May 1971. *WR 142: 8*

[Agr. Res. Serv., Logan, Utah.] Highlight: Four 50 x 50 foot plots were sprayed with 2 lb./acre 2,4-D in 1959, 1960, 1965 and 1969 to kill fleshy-rooted, spring-growing plants and annuals. These plants are the major source of food for pocket gophers. Averaging the 10-year period, 1960-69, spraying reduced gopher mounds by 93% and winter casts by 94% when compared to the unsprayed areas.

Longcore, J. R., F. B. Samson, J. F. Kreitzer, and J. W. Spann. CHANGES IN MINERAL COMPOSITION OF EGGSHELLS FROM BLACK DUCKS AND MALLARDS FED DDE IN THE DIET. *Bull. Environ. Contam. Toxicol.* 6(4): 345-350. July-Aug. 1971. *WR 142: 8*

[Patuxent Wildl. Res. Center, Laurel, Md.] Summary: Diets containing 10 and 30 ppm (dry weight) DDE were fed to black ducks, and diets containing 1, 5, and 10 ppm (dry weight) DDE were fed to mallards. Among the results were the following changes in black duck eggshell composition: (a) significant increase in the percentage of Mg, (b) significant decreases in Ba and Sr, (c) increases (which approached significance) in average percentage of eggshell Na and Cu, (d) a decrease in shell Ca which approached significance, (e) patterns of mineral correlations which in some instances were distinct to dosage groups, and (f) inverse correlations in the control group between eggshell thickness Mg and Na. Changes in mallard eggshells were: (a) significant increase in percentage of magnesium at 5 and 10 ppm DDE, (b) significant decrease in Al at 5 and 10 ppm DDE, (c) a significant decrease in Ca from eggshells from the 10 ppm DDE group, and (d) an increase in average percentage of Na in eggshells from DDE dosed ducks which approached significance.

Lundholm, Bengt, chairman. METALS AND ECOLOGY / SYMPOSIUM / STOCKHOLM 24 MARCH 1969. *Ecol. Res. Committee Bull.* no. 5. 68 p., illus. [1969.] Available at $2.00 from Natural Science Research Council, Box 23 136, S-104 35 Stockholm, Sweden. *WR 142: 8*

Of the 12 papers presented, the following are of special interest to wildlifers: *Lead poisoning of American birds*, W. H. Stickel, and *Lead poisoning in Swedish wildlife*, K. Erne and K. Borg.

Vermeer, Kees. SPOTTED SANDPIPERS AS POSSIBLE INDICATORS OF MERCURY CONTAMINATION OF RIVERS. *Blue Jay* 29(2): 59-60. June 1971. *WR 142: 8*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] "Although the Spotted Sandpiper does not appear to be a suitable indicator of mercury contamination of the North Saskatchewan River, we obtained a little more knowledge of its food habits and its occurrence along the river."

Vos, J. G., H. L. van der Maas, A. Musch, and Erica Ram. TOXICITY OF HEXACHLOROBENZENE IN JAPANESE QUAIL WITH SPECIAL REFERENCE TO PORPHYRIA, LIVER DAMAGE, REPRODUCTION, AND TISSUE RESIDUES. *Toxicol. & Appl. Pharmacol.* 18(4): 944-957, 3 figs. Apr. 1971. *WR 142: 8*

[Univ. Utrecht, Utrecht, Netherlands.] Abstract: The fungicide hexachlorobenzene (HCB), was given for 90 days to Japanese quail at dietary concentrations of 0, 1, 5, 20, and 80 ppm. Tremors and mortality occurred in birds fed 80 ppm. Red fluorescence of tissues, liver damage (enlargement of nuclei and nucleoli, proliferation of bile ductules, necrosis of hepatocytes), erythrophagocytosis in the spleen, ceroid granules in the tubules of the kidney, reduced reproduction and reduced volume of eggs were found in birds from the 80 ppm group. Shell-thickness index was unaltered. Increased liver weight, slight liver damage and enlarged fecal excretion of coproporphyrin occurred in the 5 ppm group; the no-effect level was established at 1 ppm. Significantly higher brain residues were found in male compared to female birds. HCB residues in birds of prey found in a certain area are higher than residues found in Japanese quail fed 1 ppm HCB.

Wadsworth, Carl Eugene. THE EFFECTS OF HERBICIDE APPLICATIONS ON THE ANIMAL POPULATIONS OF ASPEN COMMUNITIES. *Ph.D. thesis, Brigham Young Univ.* 109 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 9*

Approximately 475 acres of aspen, oak brush, and grass-forb-shrub communities were treated with herbicides. [Herbicide used was not specified in abstract.] Bird populations were lower in the treated area during the nesting season (June), higher in the treated area during July and August and nearly the same in each area during September. Small mammal populations decreased significantly on the treated meadow plots. *Microtus* populations increased while all other small mammals decreased in numbers on treated aspen plots. Use of the treated areas by mule deer was significantly reduced, while use of the same areas by elk was slightly increased.--From abstr.

WILDLIFE--PARASITES & DISEASES

Hayles, L. B., and I. M. Dryden. EPIZOOTIOLOGY OF RABIES IN SASKATCHEWAN. *Canadian Vet. J.* 11(7): 131-136, illus. 1970. [From Biol. Abstr. 52(3), 1971. In English with French summ.] *WR 142: 9*

[Canadian Dep. Agr., Saskatoon, Saskatchewan, Canada.]

Sudds, Richard H., and Ronald C. Craig. DISTRIBUTION OF LARVAL DIGENETIC TREMATODES IN A PART OF LAKE CHAMPLAIN AND THEIR RELATIONSHIPS WITH FISH AND WILDLIFE. *N.Y. Fish & Game J.* 17(1): 33-44, 2 figs. Jan. 1970. *WR 142: 9*

[State Univ. Coll., Plattsburgh, N.Y.] The relationships of each type of trematode with its definitive host are discussed to indicate the importance of these parasites to the health of their fish, bird and mammal hosts.--From abstr.

WILDLIFE--BIOMETRICS

Batcheler, C. L., and D. J. Bell. EXPERIMENTS IN ESTIMATING DENSITY FROM JOINT POINT AND NEAREST-NEIGHBOUR DISTANCE SAMPLES. *New Zealand Ecol. Soc. Proc.* 17. p. 111-117, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 9*

[Forest & Range Exp. Sta., Rangiora, New Zealand.] A new model for estimating density of plant or animal populations is described.

Manly, B. F. J. ESTIMATES OF A MARKING EFFECT WITH CAPTURE-RECAPTURE SAMPLING. *J. Appl. Ecol.* 8(1): 181-189. Apr. 1971. *WR 142: 9*

[Univ. Papua & New Guinea, P.O. Box 1144, Boroko, Papua.] A method has been described that makes it possible, in a capture-recapture experiment, to compare the survival of newly marked animals with the survival of animals that have been marked for some time but are still alive. In this way it is possible to check for high mortality caused by a temporary marking effect. The situation where four samples are taken has been specifically considered. Estimates of the total population size can be obtained.--From summ.

Manly, B. F. J. A SIMULATION STUDY OF JOLLY'S METHOD FOR ANALYSING CAPTURE-RECAPTURE DATA. *Biometrics* 27(2): 415-424. June 1971. *WR 142: 9*

[Univ. Papua & New Guinea, P.O. Box 1144, Boroko, Papua.] Summary: The variance formulae given by Jolly [1965] for his estimators of animal population parameters have been examined empirically by means of simulation techniques. It has been found that for small samples some of these formulae produce variance estimates that are highly correlated with the parameter estimates that they relate to. It is shown that logarithmic transformations overcome this correlation to a limited extent. Reciprocal transformations have also been briefly examined.

WILDLIFE--TECHNIQUES

Friend, Milton. QUICK FREEZING AS A STANDARD METHOD FOR EYE LENS COLLECTION. *N.Y. Fish & Game J.* 17(2): 124-125. July 1970. *WR 142: 10*
[Univ. Wis., Madison.] "It was recommended that fixation be carried out at low temperatures (0°-5°C) to minimize autolysis. Quick freezing followed by thawing in formaldehyde meets these objectives and is recommended as a standard method for field collection."

Grasset, P. EVOLUTION DES TECHNIQUES EMPLOYEES POUR L'ETUDE DES MOUVEMENTS DE POPULATIONS D'OISEAUX ET DE MAMMIFERES. [DEVELOPMENT OF TECHNIQUES USED TO STUDY BIRD AND MAMMAL POPULATION MOVEMENTS.] *Ann. Zool. Ecol. Anim.* 1(4): 499-523. 1969. [From Biol. Abstr. 52(10), 1971. In French.] *WR 142: 10*
[Inst. Nat. Rech. Agron., Jouy-en-Josas, France.] An account is given of the development of tools and field techniques such as airplanes, cinematography, recordings and radiotelemetry in the study of wildlife behavior.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Blackard, Jerry J., compiler. FEDERAL AID IN FISH AND WILDLIFE PUBLICATIONS / REGION 4. Revised edition. *Bur. Sport Fisheries & Wildl.* (Atlanta). 162 p. Mar. 1971. *WR 142: 10*
[Bur. Sport Fisheries & Wildl., Atlanta, Ga.] A bibliography of Federal Aid supported publications for the years 1937 through 1969. Region 4 includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, and the Virgin Islands.

Dathe, H. ZUR KORPERPFLEGE DER TIERE IN FREIEN WILDBAHN UND GEFANGESCHAFT. [BODY CARE OF ANIMALS IN THE WILD AND IN CAPTIVITY.] *Milu* 1(6): 349-383. 1964. [From Bird-Banding 41(4), 1970. In German.] *WR 142: 10*
Bibliography of 247 titles.

Draeger, William Charles. APPLICATIONS OF REMOTE SENSING IN MULTIPLE-USE WILDLAND MANAGEMENT. *Ph.D. thesis, Univ. Calif.* (Berkeley). 119 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 10*

Kabry, Steve. DISTRIBUTION OF BIG GAME LICENSEES IN NEW YORK. *N.Y. Fish & Game J.* 17(2): 88-94, 3 figs. July 1970. *WR 142: 10*

Erickson, David L. ATTITUDES AND COMMUNICATIONS ABOUT WILDLIFE. *Trans. 35th N. Amer. Wildl. & Natur. Resources Conf.* p. 372-383, 1 fig. 1970. *WR 142: 10*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] The attitudes of special groups towards wildlife were determined in an attempt to define an effective means of presenting management and ecology concepts to a large audience.

Fruziński, Bogusław. METSÄSTYKSEN NYKYONGELMISTA PUOLASSA. [SOME PROBLEMS OF CONTEMPORARY GAME MANAGEMENT IN POLAND.] *Suomen Riista* 23: 80-95, 5 figs. 1971. In Finnish with English summ. *WR 142: 10*
The chief problems of contemporary game management are attaining adequate big game density, improving natural feeding conditions in forest habitats, and improvement of feeding and shelter for small game in agricultural areas. Positive results indicate that the measures taken represent the right trend in intensifying game management in Poland.--From summ.

WILDLIFE--FOOD HABITS & TECHNIQUES

Coman, B. J., and H. Brunner. FOOD-HABITS ANALYSIS USING A FIBER CROSS-SECTIONING TECHNIQUE. *J. Wildl. Mgmt.* 35(3): 576-579, 2 figs. July 1971. *WR 142: 10*
[Keith Turnbull Res. Sta., Frankston, Victoria, Australia.] Abstract: The adaption of a cross-sectioning technique for fibers to the identification of animal hairs is described. The method produces sections 0.018 inch thick held

in perforations in a steel microscope slide. The slide accommodates up to six separate samples, each containing from 1 to more than 100 hairs; thus the range of hair shapes from any part of the animal can be adequately covered. The cross sections produced are suitable for taking photomicrographs. A photographic key to hair structure of known prey animals was considered to be more efficient as a method of food-habits analysis than a written key or a direct comparison with a slide collection.

Crawford, Hewlette S., Jr., and Wayne M. Harrison. WILDLIFE FOOD ON THREE OZARK HARDWOOD SITES AFTER REGENERATION CUTTING. *J. Wildl. Mgmt.* 35(3): 533-537. July 1971. *WR 142: 11*

[Southeastern Forest Exp. Sta., Blacksburg, Va.] Abstract: All stems larger than 0.5 inch dbh were cut in a black *(Quercus velutina)* and scarlet oak *(Q. coccinea)* stand in the Missouri Ozarks. The crop of vegetation desirable for wildlife during the dormant season, three growing seasons after cutting, was 392 lb per acre on the best site, where black oak site index exceeded 70; 200 lb on the medium site, where site index was between 61 and 70; and 280 lb on the poor site, where site index was 50 to 60. During the fourth year, after cutting, vegetation weights increased slightly on poor and medium sites and remained the same on the best site. Fruit production was low 3 years after clear-cutting but increased significantly 4 years after cutting.

Gysel, Leslie W. A 10-YEAR ANALYSIS OF BEECHNUT PRODUCTION AND USE IN MICHIGAN. *J. Wildl. Mgmt.* 35(3): 516-519, 1 fig. July 1971. *WR 142: 11*

[Mich. State Univ., East Lansing.] Abstract: Beechnut *(Fagus grandifolia)* production was analyzed in three woodlots in southern Michigan. Based on a relative scale, the production of viable nuts was a failure for 2 years, low for 4 years, intermediate for 3 years, and high for 1 year. The proportion of sound nuts collected in the seed traps was generally 10% or less of the total collection; the proportion of nuts utilized by animals in the trees was generally greater than 30%. Incomplete nuts comprised more than 20% of the seed-trap collections. According to the mean annual nut production for one woodlot, a single beech tree can provide the gross energy requirement for one squirrel *(Sciurus spp.)* for 13 days, assuming that 25% of the sound and animal-used nuts are available to squirrels.

Smith, Hanley Kerfoot. THE BIOLOGY, WILDLIFE USE AND MANAGEMENT OF SUMAC IN THE LOWER PENINSULA OF MICHIGAN. *Ph.D. thesis, Mich. State Univ.* 91 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 11*

Sumac appears to be of most significance in the diets of white-tailed deer *(Odocoileus virginianus)*, cottontail rabbits *(Sylvilagus floridanus)*, sharp-tailed grouse *(Pediocetes phasianellus)*, and ruffed grouse *(Bonasa umbellus)*.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Guarino, Joseph L., and James E. Forbes. PREVENTING BIRD DAMAGE TO SPROUTING CORN WITH A CARBAMATE REPELLENT. *N.Y. Fish & Game J.* 17(2): 117-120, 1 fig. July 1970. *WR 142: 11*

[Denver Wildl. Res. Center, Denver, Colo.] Abstract: The effectiveness of DRC-736 [4-(methylthio)-3,5-xylyl *N*-methylcarbamate] as a seed treatment to reduce bird damage to sprouting corn was evaluated in April 1969 at the Three Rivers Wildlife Management Area in New York. One method of calculation showed that approximately 83% fewer plants were destroyed by birds in treated fields, while a second method showed a damage reduction of about 71%.

Steiniger, F. NAGETIERSICHERE KUNSTSTOFFE. [PLASTICS WHICH ARE SAFE FROM RODENTS.] *Gesundheitsw. Desinfek.* 60(11): 154-158, illus. 1968. [From Biol. Abstr. 52(10), 1971. In German.] *WR 142: 11*

[Auestrasse 30, Hannover, Germany.] The damage caused by rodents has been observed in plastic tarpaulins used for covering fields in agricultural and technical set-ups, supply pipes and electrical conduction wires. Factors influencing this behavior and their consideration in the use of poison baits are discussed.

WILDLIFE—PREDATION, CROP DAMAGE, CONTROL—Continued

Szukiel, Eleonora. PRZYSTOSOWANIE SMOLY GAZOWNICZEJ DO OCHRONY UPRAW SOSNOWYCH PRZED ZGRYZANIEM. [APPLICATION OF GAS TAR FOR PREVENTION OF GAME DAMAGE IN PINE PLANTATIONS.] *Sylwan* 114(1): 49-53. 1970. [From Biol. Abstr. 52(12), 1971. In Polish with Russian and English summ.] *WR 142: 12*

Instructions are given on how to prepare and use Repentol-1 or raw gas tar (coal tar) for protection of pine plantations from game animal damage.

WILDLIFE—REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Selminen, Matti. RIISTATILANNE METSÄSTYSKAUSIEN 1968/69 JA 1969/70 PÄÄTTYESSÄ. [RELATIVE ABUNDANCE OF SOME GAME AND FUR SPECIES IN FINLAND AT THE END OF THE 1968/69 AND 1969/70 HUNTING SEASONS.] *Suomen Riista* 23: 136-146, 2 maps. 1971. In Finnish with English summ. *WR 142: 12*

FARMLAND & WILDLIFE

Van der Schijff, H. P. WEIDINGSPROBLEME EN NATUURBEWARING: II. [PASTURE PROBLEMS AND WILDLIFE PRESERVATION. II.] *African Wildl.* 23(2): 105-128, illus. 1969. [From Biol. Abstr. 52(7), 1971. With English summary. *WR 142: 12*

[Univ. Pretoria, Pretoria, South Africa.]

FORESTLAND—MANAGEMENT FOR & DAMAGE BY WILDLIFE

Crawford, Hewlette S., Jr. WILDLIFE HABITAT CHANGES AFTER INTERMEDIATE CUTTING FOR EVEN-AGED OAK MANAGEMENT. *J. Wildl. Mgmt.* 35(2): 275-286. Apr. 1971. *WR 142: 12*

[SE Forest Exp. Sta., Blacksburg, Va.] Abstract: Intermediate cuttings in 20- and 40-year-old black *(Quercus velutina)* and scarlet oak *(Q. coccinea)* stands in the Missouri Ozarks were made to initiate even-aged management. The effects of stand and site upon understory vegetation were evaluated using multiple regression analysis. The magnitude of each important factor (independent variable) was allowed to vary, and its effect upon understory vegetation (dependent variable) evaluated in the presence of the effect of all other measured factors. Two to 4 years after cutting, the weight of the dormant-season standing crop of total understory vegetation and vegetation desirable for wildlife was related to the stocking percent remaining in the stand, stocking percent removed, site index, and the number of stems smaller than 0.5 inch dbh. Understory growth response after overstory removal in 20-year-old stands was primarily from oak and hickory *(Carya spp.)*. Desirable wildlife plants were present, but they could not compete with the oak and hickory sprouts except where black oak site index was near 80. In 40-year-old stands where site index was below 70, oak and hickory sprouts dominated understory response to overstory removal. Desirable wildlife vegetation increased with overstory removal as the site index increased above 70. On poorer sites, oak and hickory sprouts should be controlled so that better food species may grow. Site quality should be included in descriptions of timber stands if wildlife habitat is to be evaluated. Site quality is especially indicative of forest wildlife habitat when used in combination with other stand attributes.

Goodrum, P. D., V. H. Reid, and C. E. Boyd. ACORN YIELDS, CHARACTERISTICS, AND MANAGEMENT CRITERIA OF OAKS FOR WILDLIFE. *J. Wildl. Mgmt.* 35(3): 520-532. July 1971. *WR 142: 12*

[Bur. Sport Fisheries & Wildl., Nacogdoches, Texas.] Abstract: Yields of acorns by seven species of oak *(Quercus spp.)*, indigenous to forests of the upper coastal plain, were investigated in relation to tree characteristics and climatological variables in Louisiana and east Texas. Three species were studied from 1950 through 1967, three species from 1950 through 1955, and one species from 1950 through 1954. The amount of seed produced was related to bole diameter and size of crown, and the expected yields for six species were calculated by

size-classes of boles and crowns. Radial growth was not a reliable indicator of seed yield. Some trees were inherently poor producers. Few trees below the age of 20 years produced seed. One freeze in late March during the flowering period affected seed production. There was no apparent relationship between amount of rainfall and seed production. The moisture content of acorns and the mean number of acorns required to weigh 1 pound was determined for each species. Forest dwellers, both mammalian and avian, made ready use of acorns of all species. In normal production years, the seed was usually gone from ground quadrats about the time seedfall was complete in early February, but in bumper years, some seed remained for longer periods. An estimate was made of the pounds of acorns required for five game species for a given period of time. The number of oak trees required to fulfill these needs, by species and size-classes of boles and crowns, can be determined from the expected yield tables.

Leege, Thomas A., and William O. Hickey. SPROUTING OF NORTHERN IDAHO SHRUBS AFTER PRESCRIBED BURNING. *J. Wildl. Mgmt.* 35(3): 508-515, 2 figs. July 1971. *WR 142: 13*

[Idaho Fish & Game Dep., Kamiah.] Abstract: Most of the elk *(Cervus canadensis)* herds in northern Idaho depend upon seral brush fields created many years ago by wildfires in mature timber. Browse produced in the brush fields has decreased because of advancing plant succession and palatable shrubs growing too tall to be effectively utilized. We initiated a study in 1965 to evaluate the effectiveness of spring and fall burning in reducing the height of browse. Individuals of all shrub species usually sprouted prolifically after both spring and fall burns. More sprouts generally resulted after spring burning, but the sprouts grew taller on the fall-burned plants. The physical and chemical characteristics of the sprouts are discussed. Multiple regression components are listed for predicting numbers of basal sprouts after the burn from preburn crown measurements.

Lovejoy, David Arnold. THE EFFECT OF LOGGING ON SMALL MAMMAL POPULATIONS IN THE WHITE MOUNTAIN NATIONAL FOREST OF NEW HAMPSHIRE. *Ph.D. thesis, Univ. Conn.* 182 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 13*

No increase in total small mammal population size occurred following logging on most areas; changes in the relative abundance of certain species occurred, however. *Clethrionomys gapperi* increased rapidly following logging and remained abundant through at least the 4-year stage. Shrews *(Blarina brevicauda* and *Sorex* sp., mostly *S. cinereus)* and *Napaeozapus insignis* exhibited a 1-2 year decrease in numbers followed by increasing numbers to a high in the sapling stage. *Tamias striatus* and *Peromyscus maniculatus* showed no definite response to logging.

Peek, James M., Laurits W. Krefting, and John C. Tappeiner II. VARIATION IN TWIG DIAMETER-WEIGHT RELATIONSHIPS IN NORTHERN MINNESOTA. *J. Wildl. Mgmt.* 35(3): 501-507. July 1971. *WR 142: 13*

[Univ. Minn., St. Paul.] Abstract: Estimates of twig weight based on diameter at the start of the current year's growth for eight different species collected at seven sites in northern Minnesota were compared to determine differences among sites. Twig weights derived from an equation developed for the specific site, compared with weights derived from a common equation developed for all sites, both using diameter at point of browsing, differed by more than 20% in 25 of 44 cases. Beaked hazel *(Corylus cornuta)*, mountain-ash *(Sorbus americana)*, and pussy willow *(Salix discolor)* showed the greatest variation among sites; mountain maple *(Acer spicatum)*, paper birch *(Betula papyrifera)*, and quaking aspen *(Populus tremuloides)* showed the least. Overstory canopy closure, browsing severity, and possibly soil moisture were factors that influenced these relationships. Diameter at the point of browsing varied significantly among sites for most browse species, and the moose *(Alces alces)* generally browsed twigs to a greater diameter than white-tailed deer *(Odocoileus virginianus)*. The data suggest that in northern Minnesota, twig diameter-weight relationships may vary enough among sites of different characteristics to preclude use of a common prediction equation.

MAMMALS--GENERAL

de Graaff, G., and J. A. J. Nel. NOTES ON THE SMALLER MAMMALS OF THE EASTERN CAPE NATIONAL PARKS. *Koedoe* no. 13. p. 147-149. 1970. *WR 142: 14*
[P.O. Box 787, Pretoria, South Africa.] Results of a two-month trapping survey.

Doran, G. A., and H. Baggett. A STRUCTURAL AND FUNCTIONAL CLASSIFICATION OF MAMMALIAN TONGUES. *J. Mammal.* 52(2): 427-429, 2 figs. May 1971. *WR 142: 14*
[Univ. Western Australia, Nedlands, Australia.]

Fisher, Kenneth C., and Donald A. Smith. APPLICATION OF AN AUTOMATIC INTEGRATING SYSTEM TO THE RECORDING OF SPONTANEOUS LOCOMOTOR ACTIVITY IN SMALL MAMMALS. *Anim. Behav.* 18(4): 678-681, 3 figs. 1970. *WR 142: 14*
[Smith: Carleton Univ., Ottawa, Ontario, Canada.]

Funaioli, Ugo. L'IMPORTANZA DEGLI ANIMALI SELVATICI NELL'USO DELLA TERRA DI CERTI PAESI ARIDI E SEMI-ARIDI AFRICANI. [THE IMPORTANCE OF WILD ANIMALS IN THE USE OF LAND OF SOME ARID AND SEMI ARID AFRICAN COUNTRIES.] *Riv. Agr. Subtrop. Trop.* 62(10-12): 400-428, illus. 1968. [From Biol. Abstr. 52(10), 1971. In Italian.] *WR 142: 14*
[Inst. Agron. Oltremare, Florence, Italy.]

Funaioli, Ugo. L'IMPORTANZA DEGLI ANIMALI SELVATICI NELL'USO DELLA TERRA DI CERTI PAESI ARIDI E SEMI-ARIDI AFRICANI. [THE IMPORTANCE OF WILD ANIMALS IN THE USE OF LAND OF SOME ARID AND SEMIARID AFRICAN COUNTRIES.] *Riv. Agr. Subtrop. Trop.* 63(1-3/4-6): 3-37, illus. 1969. [From Biol. Abstr. 52(9), 1971. In Italian with French and English summ.] *WR 142: 14*
[Inst. Agron. Oltremare, Florence, Italy.]

Kavanau, J. Lee. LOCOMOTION AND ACTIVITY PHASING OF SOME MEDIUM-SIZED MAMMALS. *J. Mammal.* 52(2): 386-403, 6 figs. May 1971. *WR 142: 14*
[Univ. Calif., Los Angeles.] Activity wheel studies of 7 spp. of mammals.

Martin, Robert A. SMALL MAMMALS FROM BARN OWL PELLETS. *S. Dak. Bird Notes* 23(1): 4-10, 3 figs. Mar. 1971. *WR 142: 14*
[S. Dak. School Mines & Technol., Rapid City.] A key to the more common small mammal remains found in barn owl pellets is provided.

Meshkova, N. N. [ONTOGENESIS OF PLAY BEHAVIOR IN SOME PREDATORY AND ARTIODACTYL MAMMALS.] *Zool. Zh.* 49(6): 907-915. 1970. [From Biol. Abstr. 52(12), 1971. In Russian with English summ.] *WR 142: 14*

Porkert, Jan. SKELETTRESTE VON KLEINSAEUGERN IN DER LOSUNG VOM BIRKWILD *(LYRURUS TETRIX* L.*)* IN DER WINTERPERIODE. [SKELETAL REMAINS OF SMALL MAMMALS IN SCATS OF BLACK GROUSE *(LYRURUS TETRIX* L.*).*] *Z. Jagdwiss.* 15(4): 137-144, illus. 1969. [From Biol. Abstr. 52(4), 1971. In German with French and English summ.] *WR 142: 14*

Ralls, Katherine. MAMMALIAN SCENT MARKING: MAMMALS MARK WHEN DOMINANT TO AND INTOLERANT OF OTHERS, NOT JUST WHEN THEY POSSESS A TERRITORY. *Science* (Washington) 171(3970): 443-449, illus. 1971. [From Biol. Abstr. 52(12), 1971.] *WR 142: 14*
[Sarah Lawrence Coll., Bronxville, N.Y.]

MAMMALS--TECHNIQUES

Allen, W. R. III, and J. M. Collins. A MODIFIED CRYOSTAT TECHNIQUE FOR TOOTH SECTIONING. *J. Mammal.* 52(2): 471-472, 1 fig. May 1971. *WR 142: 14*
[N.C. State Univ., Raleigh.] *"Ursus americanus."*

MAMMALS--TECHNIQUES--Continued

Andersen, Joel E., and Robert C. Stones. A NEW UNIPOLAR ELECTRODE FOR ELECTROCARDIOGRAPHY IN SMALL MAMMALS. *J. Mamal.* 52(2): 469-471, 2 figs. May 1971. *WR 142: 15*
[Mich. Technol. Univ., Houghton.]

Jackman, Kenneth L., and R. C. Cowgill. DESIGN AND LABORATORY TESTS OF A LONG-LIFE FM TRANSMITTER FOR TAGGING SMALL MAMMALS. *Behav. Res. Methods Instrum.* 2(5): 230-231, illus. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 15*
[Casper Coll., Casper, Wyo.]

Kulik, I. L. [USE OF FAST DYES IN STUDIES OF INTRASPECIFIC AND INTERSPECIFIC RELATIONS IN ANIMALS.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(1): 110-116, illus. 1970. [From Biol. Abstr. 52(4), 1971. In Russian with English summ.] *WR 142: 15*

Von Bodman, Konrad. DIE WIRKUNG VON PHARMAKA AUF KURZZEITSCHAETZUNG UND CIRCADIANE PERIODIK VON SAEUGETIEREN. [THE EFFECT OF DRUGS ON THE ESTIMATION OF SHORT-TIME INTERVALS AND THE CIRCADIAN RHYTHM OF MAMMALS.] *Z. Vergl. Physiol.* 68(3): 276-292, illus. 1970. [From Biol. Abstr. 52(3), 1971. In German with English summ.] *WR 142: 15*
[Max-Planck-Inst. Verhaltensphysiol., Seewiesen, Germany.]

Zejda, Jan, and Vera Holišová. ON THE PREBAITING OF SMALL MAMMALS IN THE ESTIMATION OF THEIR ABUNDANCE. *Zool. Listy* 19(2): 103-118, illus. 1970. [From Biol. Abstr. 52(9), 1971.] *WR 142: 15*
[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

MAMMALS--FAUNAS & MANUALS

Pine, Ronald H., Iain R. Bishop, and Ruth L. Jackson. APPENDIX: PRELIMINARY LIST OF MAMMALS OF THE XAVANTINA/CACHIMBO EXPEDITION (CENTRAL BRAZIL). *Trans. Roy. Soc. Trop. Med. Hyg.* 64(5): 668-670. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 15*
[U.S. Nat. Mus., Washington, D.C.]

Reinhardt, S. ZUR VERBREITUNG DER GROSSAEUGER AUF SARDINIEN. [ON THE DISTRIBUTION OF LARGE MAMMALS ON SARDINIA.] *Bonner Zool. Beitr.* 20(4): 429-436, illus. 1969. [From Biol. Abstr. 52(10), 1971. In German.] *WR 142: 15*
[Tropeninst., 2 Hamburg 4, Germany.] Twenty to thirty *Monachus albiventer*, 2000-3000 *Sus scrofa meridionalis*, 8-12 *Dama dama*, 130-170 *Cervus elaphus corsicanus* and 650-750 *Ovis ammon musimon* were found on Sardinia. Protective measures are necessary to prevent the complete disappearance of these species on Sardinia. Presently used measures are not sufficient.

Van Peenen, P. F. D., John F. Duncan, and Rudolph H. Light. MAMMALS OF SOUTH VIETNAM: I. MAMMALS COMMONLY TRAPPED DURING SURVEYS. *Mil. Med.* 135(5): 384-390, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 15*
[Nat. Nav. Med. Center, Bethesda, Md.]

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Eisentraut, M. GIBT ES IN WEST-AFRIKA EINE AUF MONTANGEBIETE BESCHRAENKTE SAEUGETIERFAUNA? [ARE THERE MAMMALS IN WEST AFRICA WHICH ARE LIMITED TO MOUNTAIN AREAS?] *Bonner Zool. Beitr.* 20(4): 325-334, illus. 1969. [From Biol. Abstr. 52(10), 1971. In German.] *WR 142: 15*
[Bonn, Germany.]

King, Dennis Richard. DEER AND HARE POPULATION-RANGE RELATIONSHIPS ON GARDEN AND SOUTH FOX ISLANDS, MICHIGAN. *Ph.D. thesis, Univ. Mich.* 244 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 16*

There was a direct relationship between deer and hare population densities on the two islands and winter hardwood utilization. Seven times the deer population utilized 6.5 times as much hardwood browse and 25 times the hare population utilized 28 times as much winter browse. This relationship did not hold true for ground hemlock where seven times the deer population utilized 25 times as much browse.

Krull, John N. SMALL MAMMAL POPULATIONS IN CUT AND UNCUT NORTHERN HARDWOOD FORESTS. *N.Y. Fish & Game J.* 17(2): 128-130. July 1970. *WR 142: 16*

[Southern Ill. Univ., Carbondale.] *"Sorex spp., Microtus pennsylvanicus, Synaptomys cooperi, Clethrionomys gapperi, Peromyscus spp., Blarina brevicauda, and Napaeozapus insignis."*

Romansky, James W., Jr. EFFECTS OF POPULATION REMOVAL ON THE HABITAT OF SMALL MAMMALS. *N.Y. Fish & Game J.* 17(2): 102-109, 1 fig. July 1970. *WR 142: 16*

[State Univ. N.Y., Albany.] Abstract: Possible changes in distribution and habitat preference of small mammals species as a result of reduced population pressures was studied by intensively trapping a 0.996-hectare area on the eastern shore of Cranberry Lake (N.Y.) in the summer of 1967. The effect of population removal on habitat preference was not great. Regardless of the population density, distribution of the species was the same throughout the study period. Elimination of one species in a habitat did not result in the appearance of another species.

Shtil'mark, F. R., G. I. Sukhomirov, V. M. Sapaev, and S. P. Kucherenko. [DYNAMICS OF THE STOCKS OF HUNTING ANIMALS IN THE LOWER AMUR REGION DURING THE LAST CENTURY.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(3): 29-39, illus. 1970. [From Biol. Abstr. 52(3), 1971. In Russian with English summ.] *WR 142: 16*

MAMMALS--PARASITES & DISEASES

Enright, J. B., C. E. Franti, D. E. Behymer, W. M. Longhurst, V. J. Dutson, and M. E. Wright. *COXIELLA BURNETI* IN A WILDLIFE-LIVESTOCK ENVIRONMENT / DISTRIBUTION OF Q FEVER IN WILD MAMMALS. *Amer. J. Epidemiol.* 94(1): 79-90, 3 figs. July 1971. *WR 142: 16*

[Univ. Calif., Davis.] There was evidence of exposure to *Coxiella burneti* in 17 of 21 species tested. The highest prevalence was in coyotes (78%), foxes (55%) and brush rabbits (53%). The lowest was in grey squirrels (6%), wood rats (3%) and kangaroo rats (2%). Deer had a prevalence of 22% and the prevalence of antibody in wild mice (peromyscus) ranged from 31% in brush mice to 9% in pinyon mice. Other animal species having antibodies were harvest mice, deer mice, meadow mice, jackrabbits, chipmunks, ground squirrels, raccoons and striped skunks. The prevalence of detectable antibodies in wildlife appeared to be related to their association with infected livestock or small mammals. Exposure and possible infection through the respiratory route may have been related to the food habits of wild animals.--From abstr.

Frerichs, Wayne M., and A. A. Holbrook. *BABESIA* SPP. AND *HAEMOBARTONELLA* SP. IN WILD MAMMALS TRAPPED AT THE AGRICULTURAL RESEARCH CENTER, BELTSVILLE, MARYLAND. *J. Parasitol.* 56(1): 130. Feb. 1970. *WR 142: 16*

[Agr. Res. Serv., Beltsville, Md.] "Raccoons and skunks in the area studied have a high incidence of infection with *Babesia* spp. There is no indication that these are hematozoa which have escaped from the laboratory, but rather that they are separate species of *Babesia* enzootic in this ecological situation."

Hallett, A. F., D. McNeill, and K. F. Meyer. A SEROLOGICAL SURVEY OF THE SMALL MAMMALS FOR PLAGUE IN SOUTHERN AFRICA. *South African Med. J.* 44(29): 831-837. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 17*
[Med. Ecol. Cent., Johannesburg, South Africa.]

Krishnaswami, A. K., S. N. Ray, and R. K. Chandrahas. SEROLOGICAL SURVEY OF SMALL MAMMALS IN THE SOUTH INDIAN PLAGUE FOCUS. *Indian J. Med. Res.* 58(10): 1407-1412. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 17*
[Nat. Inst. Commun. Dis., New Delhi, Delhi, India.]

Moulton, Daniel W., and Wayne H. Thompson. CALIFORNIA GROUP VIRUS INFECTIONS IN SMALL, FOREST-DWELLING MAMMALS OF WISCONSIN: SOME ECOLOGICAL CONSIDERATIONS. *Amer. J. Trop. Med. Hyg.* 20(3): 474-482, 2 figs. May 1971. *WR 142: 17*
[Thompson: Dep. Preventive Med., 437 Henry Mall, Madison, Wis.] On a farm in southwestern Wisconsin, where a case of California encephalitis had occurred, an 18-month study was made of small, forest-dwelling mammals and the appearance of antibodies to California group virus in them. The population densities of the mammals and their movements were obtained from trapping records and the observation of marked animals in the field. We concluded that our findings were consistent with the hypothesis that *A. triseriatus* is a common vector of CEV among these mammals in southwestern Wisconsin.--From abstr.

Van Den Broek, Elisabeth, and J. Jansen, Jr. PARASITES OF ANIMALS IN THE NETHERLANDS. SUPPLEMENT III: ECTO- AND ENDOPARASITES OF WILD MAMMALS (LIST). *Bijdr. Dierk.* 39. p. 7-10. 1969. [From Biol. Abstr. 52(9), 1971.] *WR 142: 17*
[State Univ., Utrecht, Netherlands.]

Van Peenen, P. F. D., J. D. Marshall, Jr., D. C. Cavanaugh, and James H. Rust, Jr. MAMMALS OF SOUTH VIETNAM: II. DISEASE IMPLICATIONS. *Mil. Med.* 135 (5): 391-397. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 17*
[Nat. Nav. Med. Center, Bethesda, Md.]

Verger, J. M. ENQUETE SUR LA PRESENCE EVENTUELLE DE *BRUCELLA* CHEZ CERTAINES ESPECES ANIMALES SAUVAGES DE FRANCE, DE L'ORDRE DES RONGEURS, DES INSECTIVORES ET DES CARNIVORES. [A SEARCH FOR THE POSSIBLE PRESENCE OF *BRUCELLA* IN CERTAIN WILD ANIMAL SPECIES IN FRANCE AMONG RODENTS, INSECTIVORES, AND CARNIVORES.] *Ann. Rech. Vet.* 1(1): 141-147. 1970. [From Biol. Abstr. 52(12), 1971. In French with English summ.] *WR 142: 17*
[Inst. Nat. Rech. Agron., Nouzilly, France.]

SHREWS, MOLES, BATS

Aellen, V., and P. Strinati. CHAUVES-SOURIS CAVERNICOLES DE TUNISIE. [CAVERNICOLOUS BATS OF TUNISIA.] *Mammalia* 34(2): 228-236, illus. 1970. [From Biol. Abstr. 52(5), 1971. In French with English summ.] *WR 142: 17*
[Mus. Hist. Natur., Geneva, Switzerland.]

Allen, Rae, Stanley K. Taylor, and S. Edward Sulkin. STUDIES OF ARTHROPOD-BORNE VIRUS INFECTIONS IN CHIROPTERA: VIII. EVIDENCE OF NATURAL ST. LOUIS ENCEPHALITIS VIRUS INFECTION IN BATS. *Amer. J. Trop. Med. Hyg.* 19(5): 851-859. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 17*
[Univ. Tex., Dallas.]

Balcells, R. E. NUEVAS CITAS DE MURCIELAGOS Y NICTERIBIDOS DEL PAIS VASCO-CANTABRICO. [NEW REFERENCES TO BATS AND NYCTERIBIIDAE OF THE BASQUE-CANTABRIC COUNTRY (SPAIN).] *Bol. Real Soc. Espan. Hist. Natur. Secc. Biol.* 66(1/2): 17-38. 1968. [From Biol. Abstr. 52(5), 1971. In Spanish with German and English summ.] *WR 142: 17*
[Centro Pirenaico Biol. Exp., Barcelona, Spain.]

Barus, V., and B. Rysavy. AN ATTEMPT OF ANALYZING THE BIOGEOGRAPHY OF NEMATODES OF THE FAMILY TRICHOSTRONGYLIDAE, PARASITIZING BATS OF THE SUBORDER MICROCHIROPTERA. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.)* *J. Parasitol.* 56(4, sect. II, pt. 1): 22. Aug. 1970. Abstract only. *WR 142: 18*
[Inst. Parasitol., Czechoslovak Acad. Sci., Prague, Czechoslovakia.]

Benes, Bohuslav. BEITRAG ZUR VERBREITUNG UND BIONOMIE DER ALPENSPITZMAUS *(SOREX ALPINUS* SCHINZ) IN DER TSCHECHOSLOWAKEI. [CONTRIBUTION TO THE DISTRIBUTION AND BIONOMICS OF THE SHREW *(SOREX ALPINUS)* IN CZECHOSLOVAKIA.] *Cas. Slezskeho Mus. Vedy Prir. Sci. Natur.* 19(1): 45-49. 1970. [From Biol. Abstr. 52(2), 1971. In German.] *WR 142: 18*
[Slezske Mus., Opava, Czechoslovakia.]

Critch, Pamela J. THE ROCK ELEPHANT SHREW. *African Wildl.* 23(2): 139-144, illus. 1969. [From Biol. Abstr. 52(7), 1971.] *WR 142: 18*
[South African Inst. Med. Res., Johannesburg, South Africa.]

Daniel, M. J. BAT SIGHTINGS ON KAPITI ISLAND, NEW ZEALAND, 1906-1969. *New Zealand Ecol. Soc. Proc.* 17: 136-138. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 18*
[DSIR, Lower Hutt, New Zealand.]

Davis, Richard M., and Richard B. Loomis. THE INTRANASAL CHIGGER *MICROTROMBICULA MERRIHEWI* (ACARINA: TROMBICULIDAE) IN THE NORTH AMERICAN FREE-TAILED BAT, *TADARIDA BRASILIENSIS.* *Southwestern Natur.* 15(4): 437-458, 17 figs. 25 May 1971. *WR 142: 18*
[Calif. State Coll., Long Beach.]

Dew, Barbara B., and Bruce McMillan. SEASONAL VARIATION OF *POLYCHROMOPHILUS MELANIPHERUS* (SPOROZOA: HAEMOPROTEIDAE) IN THE BENT-WINGED BAT *MINIOPTERUS SCHREIBERSII* (CHIROPTERA) IN NEW SOUTH WALES. *Parasitology* 61(1): 161-166, 1 fig. Aug. 1970. *WR 142: 18*
[McMillan: Univ. Sydney, Sydney, Australia.] Gametocytes of a polychromophilid parasite indistinguishable from those of *P. melanipherus* are commonly found in the blood of the bent-winged bat *Miniopterus schreibersii* in New South Wales. There is a seasonal variation in infection rate, this being lowest in April (0%) and highest in August (up to 82.7%).—From summ.

Easterla, David A. NOTES ON YOUNG AND ADULTS OF THE SPOTTED BAT, *EUDERMA MACULATUM.* *J. Mammal.* 52(2): 475-476, 1 fig. May 1971. *WR 142: 18*
[Purdue Univ., Lafayette, Ind.]

Gopalkrishna, A., and A. Madhavan. SEX RATIO IN SOME INDIAN BATS. *J. Bombay Natur. Hist. Soc.* 67(2): 171-175. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 18*
[Inst. Sci., Nagpur, Maharashtra, India.]

Humphrey, Stephen R. PHOTOGRAPHIC ESTIMATION OF POPULATION SIZE OF THE MEXICAN FREE-TAILED BAT, *TADARIDA BRASILIENSIS.* *Amer. Midland Natur.* 86(1): 220-223, 1 fig. July 1971. *WR 142: 18*
[Univ. Fla., Gainesville.] Abstract: A photographic method of estimating population size was developed for studying large nursery colonies of *Tadarida brasiliensis.* A series of estimates outlined the seasonal pattern of population-size change. Bats were nonuniformly distributed in the evening flight by sex and reproductive status. Systematic programs using photographic population-size estimates and Constantine-trap samples should enable researchers to conduct more sophisticated analyses of population dynamics than have been possible for this species in the past.

Humphrey, Stephen Reynolds. POPULATION ECOLOGY OF THE LITTLE BROWN BAT, *MYOTIS LUCIFUGUS*, IN INDIANA AND NORTH-CENTRAL KENTUCKY. *Ph.D. thesis, Okla. State Univ.* x + 138 p., 28 figs. July 1971. *WR 142: 19*
The ecological characteristics and interactions of *Myotis lucifugus* populations were investigated by a team of researchers from 1952 to 1969. Individual histories of movements and survival were kept on 71,706 banded animals. Female *M. lucifugus* spent the warm months in nursery populations, where they bore and reared their young. Most males stayed in roosts separate from the nurseries. During winter the bats hibernated in caves. Fall movements included dispersal from nurseries, migration to caves, swarming at caves, secondary dispersal, and secondary migration. Extremes of fall swarming activity were synchronous at two distant caves, and activity showed similar phenological patterns from year to year. The reproductive rate per female was 0.98 offspring per year. The sex ratio of neonatal young was 1:1. Mean life expectancy of females was slightly more than 2 years. Extermination or bat-proofing of nurseries caused loss of at least 52% of the *M. lucifugus* in a decade. Loss as measured in winter populations was 80%. Continued declines in abundance are expected.--From abstr.

Jones, Clyde, and Royal D. Suttkus. WING LOADING IN *PLECOTUS RAFINESQUII*. *J. Mammal.* 52(2): 458-460. May 1971. *WR 142: 19*
[U.S. Nat. Mus., Washington, D.C.]

Kiselev, V. E. [THE DISTRIBUTION AND BIOLOGY OF THE MOLE *TALPA EUROPAEA* IN THE NORTHERN RAIONS OF BASHKIRIYA.] *Uch. Zap. Birskii Gos. Pedagog. Inst.* 64. p. 230-238. 1969. [From Biol. Abstr. 52(12), 1971, from Referat. Zh., Biol., 1970, no. 7I613. Transl. of Russian abstr.] *WR 142: 19*

Kluger, Matthew Jay. THERMOREGULATION IN THE BAT, *EPTESICUS FUSCUS*. *Ph.D. thesis, Univ. Ill.* (Urbana-Champaign). 121 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 19*

Kulzer, Erwin. AFRICAN FRUIT-EATING CAVE BATS: PART II. *African Wildlife* 23(2): 129-138, illus. 1969. [From Biol. Abstr. 52(7), 1971.] *WR 142: 19*
[Univ. Tübingen, Tübingen, Germany.]

Kuznetsov, G. V. [DIGGING ACTIVITY OF *TALPA CAUCASICA*.] *Zool. Zh.* 49(8): 1254-1256, illus. 1970. [From Biol. Abstr. 52(8), 1971. In Russian with English summ.] *WR 142: 19*
[Moscow State Univ., Moscow, USSR.]

Medway, [Lord], and Adrian G. Marshall. ROOST-SITE SELECTION AMONG FLAT-HEADED BATS *(TYLONYCTERIS* SPP.). *J. Zool.* (London) 161(2): 237-245, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 19*
[Univ. Malaya, Kuala Lumpur, Malaysia.]

Milner, C., and D. F. Ball. FACTORS AFFECTING THE DISTRIBUTION OF THE MOLE *(TALPA EUROPAEA)* IN SNOWDONIA (NORTH WALES). *J. Zool.* (London) 162(1): 61-69. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 19*
[Nature Conserv., Bangor, Caernarvonshire, Wales.]

Mutere, Festo A. BAT STUDIES IN UGANDA. *Stud. Speleol.* 2(2): 61-68, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 19*
[Univ. Coll., Nairobi, Kenya.]

Polyakov, E. F. [THE DYNAMICS OF THE POPULATION SIZE AND BAG OF MOLES IN KEMEROVO OBLAST.] *Sb. Nauch.-Tekh. Inform. Vses. Nauch.-Issled. Inst. Okhotnich'ego Khoz. Zverovod.* 27. p. 44-50. 1969. [From Biol. Abstr. 52(12), 1971, from Referat. Zh., Biol., 1970, no. 7I745. Transl. of Russian abstr.] *WR 142: 19*

Poulet, A. R. LES RHINOPOMATIDAE DE MAURITANIE. [THE RHINOPOMATIDAE OF MAURITANIA.] *Mammalia* 34(2): 237-243, illus. 1970. [From Biol. Abstr. 52(5), 1971. In French with English summ.] *WR 142: 20*
[Office Rech. Sci. Tech. Outre Mer, Inchiri, Dakar.]

Radulescu, Ion, and Laurentiu Lustun. CONTRIBUTIUNI LA CUNOASTEREA PARAZITOFAUNEI CHIROPTERELOR DIN REPUBLICA SOCIALISTA ROMANIA. [CONTRIBUTIONS TO THE KNOWLEDGE OF THE PARASITIC FAUNA OF THE CHIROPTERA IN THE SOCIALIST REPUBLIC OF ROMANIA.] *Comun. Zool.* 5: 21-34, illus. 1967. [From Biol. Abstr. 52(12), 1971. In Romanian with Russian and English summ.] *WR 142: 20*
[Soc. Stiinte Natur. si Geogr. Repub. Soc. Rom., Bucharest, Romania.]

Rasweiler, John Jacob IV. THE LABORATORY BIOLOGY OF THE LONG-TONGUED BAT, *GLOSSOPHAGA SORICINA*: MAINTENANCE PROCEDURES, ESTIVATION, THE MENSTRUAL CYCLE, HISTOPHYSIOLOGY OF THE OVIDUCT, AND INTRAMURAL IMPLANTATION. *Ph.D. thesis, Cornell Univ.* 470 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 20*

Roer, Hubert. ZUR ERNAHRUNGSBIOLOGIE VON *PLECOTUS AURITUS* (L.) (MAM. CHIROPTERA). [ON THE FEEDING HABITS OF *PLECOTUS AURITUS* (L.) (MAMMALIA CHIROPTERA).] *Bonner Zool. Beitr.* 20(4): 378-383, illus. 1969. [From Biol. Abstr. 52(10), 1971. In German with English summ.] *WR 142: 20*
[Bonn, Germany.]

Ruprecht, Andrzej L. DISTRIBUTION OF *MYOTIS MYOTIS* (BORKHAUSEN, 1797) AND REPRESENTATIVES OF THE GENUS *PLECOTUS* GEOFFROY, 1818 IN POLAND. *Acta Theriologica* 16(7): 95-104, 2 figs. Apr. 1971. In English with Polish summ. *WR 142: 20*
[Mammals Res. Inst., Bialowieza, Poland.] *"Myotis myotis, Plecotus austriacus, and P. auritus."*

Simkin, G. N. [ECHOLOCATION, AS METHODS OF RECOGNITION AND DIRECTION FINDINGS OF THE AIM IN SMOOTH-NOSED BATS.] *Vestn. Mosk. Univ. Ser. VI Biol. Pochvoved.* 25(1): 111-113. 1970. [From Biol. Abstr. 52(10), 1971. In Russian.] *WR 142: 20*
[Moscow State Univ., Moscow, USSR.]

Simkin, G. N. [SOME REGULAR PATTERNS IN THE DEVELOPMENT OF ECHOLOCATION IN BATS DURING DIRECTION FINDING, RECOGNITION AND DISCRIMINATION OF BULKY TARGETS OF COMPLEX CONFIGURATION DURING FREE FLIGHT.] *Biol. Nauki* 13(3): 61-71. 1970. [From Biol. Abstr. 52(11), 1971. In Russian.] *WR 142: 20*
[Moscow State Univ., Moscow, USSR.]

Simkin, G. N., and N. D. Patlyakevich. [LOCATION SYSTEMS IN BATS OF THE FAUNA OF THE USSR. 2. GENUS *VESPERTILIO.*] *Zool. Zh.* 49(8): 1189-1207, illus. 1970. [From Biol. Abstr. 52(7), 1971. In Russian with English summ.] *WR 142: 20*
[Moscow State Univ., Moscow, USSR.]

Soucek, Jan, and Alois Novotny. PRISPEVEK K ROZSIRENI A BIONOMII NETOPYR USATEHO *PLECOTUS AURITUS* (LINNAEUS, 1758) A NETOPYRA DLOUHOUCHEHO *PLECOTUS AUSTRIACUS* (FISCHER, 1829) NA SUMPERSKU (SEVERNI MORAVA). [DISTRIBUTION AND BIONOMICS OF BATS, *PLECOTUS AURITUS* AND *PLECOTUS AUSTRIACUS*, IN THE AREA OF THE TOWN SUMPERK (NORTH MAHREN).] *Cas. Slezskeho Mus. Vedy Prir. Sci. Natur.* 19(1): 19-23. 1970. [From Biol. Abstr. 52(2), 1971. In Czech with German summ.] *WR 142: 20*
[Sprava chranene krajinne oblasti Jeseniky, Prague, Czechoslovakia.]

Strelkov, P. P. [SETTLING AND MIGRATORY SPECIES OF BATS (CHIROPTERA) IN THE EUROPEAN PART OF THE USSR. I.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(2): 38-52. 1970. [From Biol. Abstr. 52(1), 1971. In Russian with English summ.] *WR 142: 20*

Tagil'tsev, A. A. [ON LIFE PATTERNS OF ACARI AND INSECTS ASSOCIATED WITH BATS OVER THE TERRITORY OF THE SOVIET UNION.] *Parazitologiya* 4(3): 283-287. 1970. [From Biol. Abstr. 52(3), 1971. In Russian with English summ.] *WR 142: 21*
[Omsk Res. Inst. Infec., Min. Health RSFSR, Omsk, USSR.]

Tagi-Zade, T. A., A. S. Mardanly, I. B. Akhmedov, F. P. Alekperov, and Sh. N. Gazanov. [EXAMINATION OF BATS FOR LEPTOSPIROSIS ON THE TERRITORY OF AZERBAIJAN SSR.] *Zh. Mikrobiol. Epidemiol. Immunobiol.* 47(9): 118-121. 1970. [From Biol. Abstr. 52(7), 1971. In Russian with English summ.] *WR 142: 21*
[N. Narimanov Azerbaijan Med. Inst., Baku, USSR.]

Tuttle, Merlin D. DISTRIBUTION AND ZOOGEOGRAPHY OF PERUVIAN BATS, WITH COMMENTS ON NATURAL HISTORY. *Univ. Kans. Sci. Bull.* 49(2): 45-86. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 21*
[Univ. Kans., Lawrence.]

Valdez, Raul. TAXONOMY AND GEOGRAPHIC VARIATION OF THE BATS OF THE GENUS *PHYLLOSTOMUS*. *Ph.D. thesis, Tex. A&M Univ.* 141 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 21*
"Phyllostomus discolor, P. latifolius, P. elongatus, and *P. hastatus."*

Vogel, Peter. BIOLOGISCHE BEOBACHTUNGEN AN ETRUSKERSPITZMAEUSEN *(SUNCUS ETRUSCUS* SAVI, 1832*)*. [BIOLOGICAL OBSERVATIONS ON *SUNCUS ETRUSCUS* SAVI, 1832.] *Z. Säugetierk.* 35(3): 173-185, illus. 1970. [From Biol. Abstr. 52(5), 1971. In German with French and English summ.] *WR 142: 21*
[Univ. Basel, Basel, Switzerland.]

Walley, Harian D. MOVEMENTS OF *MYOTIS LUCIFUGUS LUCIFUGUS* FROM A COLONY IN LaSALLE COUNTY, ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(4): 409-414, illus. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 21*
[Northern Ill. Univ., De Kalb.]

Wilson, Don E. LIFE HISTORY OF *MYOTIS NIGRICANS* (MAMMALIA: CHIROPTERA). *Ph.D. thesis, Univ. N. Mex.* 95 p. 1970. [From Diss. Abstr. Int. B. Sci. Eng. 31(10), 1971.] *WR 142: 21*
Myotis nigricans is a small vespertilionid bat limited in distribution to the neotropical zone. A life history study was made of a colony of more than 1,000 individuals on Barro Colorado Island in the Panama Canal Zone. These bats are locally abundant in the Canal Zone and commonly roost in buildings. Economically, *M. nigricans* may be important as a reservoir for rabies and other diseases. The tendency of this bat to utilize man-made structures as roosts causes them to be considered as pests in the Canal Zone and control measures may be limiting populations in this area.--From abstr.

Wilson, Don E., and James S. Findley. SPERMATOGENESIS IN SOME NEOTROPICAL SPECIES OF *MYOTIS*. *J. Mammal.* 52(2): 420-426, 2 figs. May 1971. *WR 142: 21*
[Univ. N. Mex., Albuquerque.] *"Myotis nigricans, M. albescens,* and *M. simus."*

RABBITS & PIKAS

Bigham, Sam Riley. THE COMPARATIVE UTILITY OF PLANT LIFE-FORM AND OTHER VEGETATIONAL CHARACTERISTICS IN EVALUATING THE HABITAT OF THE COTTONTAIL. *Ph.D. thesis, Okla. State Univ.* 77 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31 (11), 1971.] *WR 142: 21*
The life-forms, stem densities, and overhead coverage of plants at sites used for shelter, escape cover and for feeding were compared as to their relative values for defining and evaluating rabbit habitat. Food preference was also described to refine the vegetational analysis of feeding sites.

Chapman, Joseph A. ORGAN WEIGHTS AND SEXUAL DIMORPHISM OF THE BRUSH RABBIT. *J. Mammal.* 52(2): 453-455. May 1971. *WR 142: 22*
[Univ. Md., LaVale.] *"Sylvilagus bachmani uberoolor."*

Cone, Donna M., and A. L. Cone. CAGE ACTIVITY IN COTTONTAIL RABBITS. *Psychonomic Sci. Sect. Anim. Physiol. Psychol.* 21(5): 259-260, illus. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 22*
[Lynchburg Coll., Lynchburg, Va.]

Douglas, M. J. W. MOVEMENTS OF HARES *LEPUS EUROPAEUS* PALLAS, IN HIGH COUNTRY IN NEW ZEALAND. *New Zealand J. Sci.* 13(2): 287-305, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 22*
[Forest Res. Inst., Rangiora, New Zealand.]

Gruzdev, V. V. [TERRITORIAL CHARACTERISTICS OF REPRODUCTION AND DEATH RATE OF GRAY HARE.] *Vestn. Mosk. Univ. Ser. VI Biol. Pochvoved.* 25(1): 34-41. 1970. [From Biol. Abstr. 52(6), 1971. In Russian.] *WR 142: 22*
[Moscow State Univ., Moscow, USSR.]

Hinze, Harry C. NEW MEMBER OF THE HERPESVIRUS GROUP ISOLATED FROM WILD COTTONTAIL RABBITS. *Infec. Immun.* 3(2): 350-354. 1971. [From Biol. Abstr. 52(10), 1971.] *WR 142: 22*
[Univ. Wis., Madison.]

Hurlbut, Edward C., Jr. SEASONAL TESTOSTERONE LEVELS IN COTTONTAIL RABBITS. *Ph.D. thesis, Univ. Mo.* 53 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31 (10), 1971.] *WR 142: 22*

Kibbe, D. P., and R. L. Kirkpatrick. SYSTEMATIC EVALUATION OF LATE SUMMER BREEDING IN JUVENILE COTTONTAILS, *SYLVILAGUS FLORIDANUS*. *J. Mammal.* 52(2): 465-467. May 1971. *WR 142: 22*
[Va. Polytech. Inst., Blacksburg.]

Kirkpatrick, Roy L., and Douglas P. Kibbe. NUTRITIVE RESTRICTION AND REPRODUCTIVE CHARACTERISTICS OF CAPTIVE COTTONTAIL RABBITS. *J. Wildl. Mgmt.* 35(2): 332-338. Apr. 1971. *WR 142: 22*
[Univ. Wis., Madison.] Abstract: Twenty-six female and 16 male cottontail rabbits *(Sylvilagus floridanus)* were used in two experiments to investigate the effects of restricted feeding (70% ad libitum) on various reproductive and body characteristics in confinement. Animals on the restricted diet lost weight and had little or no fat reserves whereas those on the ad libitum diet maintained their original weights. In both experiments, females on the restricted diet had significantly *(P<0.01)* fewer large ovarian follicles than females on the ad libitum diet. Gonad and accessory sex-organ weights (uteri in females, seminal vesicles and prostates in males) were significantly *(P<0.01)* smaller in animals on restricted diets than in controls when treatments were imposed for 9 weeks, but only weights of seminal vesicles in males showed a significant *(P<0.05)* difference when treatments were imposed for 5 weeks. No significant differences were found in follicle-stimulating hormone (FSH) or luteinizing hormone (LH) activities of the anterior pituitaries.

Pielowski, Zygmunt. THE INDIVIDUAL GROWTH CURVE OF THE HARE. *Acta Theriologica* 16(5): 79-88, 5 figs. Apr. 1971. In English with Polish summ. *WR 142: 22*
[Polish Hunting Ass., Res. Sta., Czempiń n/Poznań, Poland.] *"Lepus europaeus."*

Pielowski, Zygmunt. LENGTH OF LIFE OF THE HARE. *Acta Theriologica* 16(6): 89-94. Apr. 1971. In English with Polish summ. *WR 142: 22*
[Polish Hunting Ass., Res. Sta., Czempiń n/Poznań, Poland.] *"Lepus europaeus."*

Pulliainen, Erkki. METSÄJÄNIKSEN TALVIRAVINNOSTA KOILLIS-LAPIN TUNTURIA-LUEKLLA. [WINTER NUTRITION OF THE SNOW HARE *(LEPUS TIMIDUS)* IN NORTHEASTERN LAPLAND.] *Suomen Riista* 23: 72-79, 2 figs. 1971. In Finnish with English summ. *WR 142: 23*

Read, Ralph A. BROWSING PREFERENCE BY JACKRABBITS IN A PONDEROSA PINE PROVENANCE PLANTATION. *U.S. Forest Serv. Res. Note RM*-186. 4 p., 1 fig. 1971. *WR 142: 23*

[Univ. Nebr., Lincoln.] Although jackrabbits had equal access to all plantings, browsing was heaviest on those plots containing seedlings originating from Washington, Oregon, Idaho, Arizona, and western Montana. The differences in browsing preference appear to be related to genetic variation in the tree species.

Rongstad, Orrin J., and John R. Tester. BEHAVIOR AND MATERNAL RELATIONS OF YOUNG SNOWSHOE HARES. *J. Wildl. Mgmt.* 35(2): 338-346, 5 figs. Apr. 1971. *WR 142: 23*

[Univ. Wis., Madison.] Abstract: The behavior of four young snowshoe hares *(Lepus americanus)* and the activities of a female during the time she was caring for these young were determined by using radiotelemetry. The female was with her young only once each day for only 5 to 10 minutes. The time of returning was remarkably constant, and appeared to be related to a certain light intensity during the evening twilight period. The movements of a second female during a period when she was known to have had two litters was also determined. It appeared that this family also assembled only once a day but later in the twilight period. The young spent the day in separate hiding places and got together only about 5 to 10 minutes before the female returned to nurse them; they then dispersed and remained alone until the following evening. Weekly home ranges of the young varied from 1.6 acres to 4.9 acres during the second to sixth week of life; they then increased rapidly to about the size of their mother's home range (approximately 20 acres).

Tomilova, T. P. [THE SIZE OF THE HARE POPULATION AND THE UTILIZATION OF HARE STOCKS IN KOROV OBLAST.] *Sb. Nauch.-Tekh. Inform. Vses. Nauch.-Issled. Inst. Okhotnich'ego Khoz. Zverovod.* 27. p. 17-27. 1969. [From Biol. Abstr. 52(12), 1971, from Referat. Zh., Biol., 1970, no. 71746. Transl. of Russian abstr.] *WR 142: 23*

Toschi, A., L. Leporati, E. Bassini, and M. Spagnesi. RICERCHE SPERIMENTALI PRELIMINARI SULL'ALLEVAMENTO DELLA LEPRE *(LEPUS EUROPAEUS* PALLAS). [PRELIMINARY EXPERIMENTAL RESEARCH INTO THE BREEDING OF THE COMMON HARE *(LEPUS EUROPAEUS).*] *Ric. Biol. Selvaggina* 51. 40 p., 15 figs. 1971. In Italian with French, German, and English summ. *WR 142: 23*

RODENTS--MISCELLANEOUS

Adamovich, V. L., and G. T. Vorob'ev. [CHARACTERISTICS OF DISTRIBUTION OF *MICROTUS ARVALIS* IN THE POLESSKY PROVINCE WITH RESPECT TO THE PROPERTIES OF SOIL.] *Zool. Zh.* 49(11): 1705-1714. 1970. [From Biol. Abstr. 52(11), 1971. In Russian with English summ.] *WR 142: 23*

Alekperov, A. M., and V. Kh. Grekova. [AGE-RELATED VARIABILITY AND MOULTING OF THE FAT DORMOUSE *(GLIS GLIS* L.) IN THE NORTHWESTERN PORTION OF THE CAUCASUS.] *Uch. Zap. Azerb. Univ. Ser. Biol. Nauk.* 3. p. 53-59. 1969. [From Biol. Abstr. 52(9), 1971, from Referat. Zh., Biol., 1970, no. 71648. Transl. of Russian abstr.] *WR 142: 23*

Ash, Lawrence R., and John M. Riley. DEVELOPMENT OF SUBPERIODIC *BRUGIA MALAYI* IN THE JIRD, *MERIONES UNGUICULATUS*, WITH NOTES ON INFECTIONS IN OTHER RODENTS. *J. Parasitol.* 56(5): 969-973. Oct. 1970. *WR 142: 24*
[Univ. Calif., Los Angeles.] Third-stage larvae of subperiodic *Brugia malayi* from *Aedes togoi* or *Aedes aegypti* (Liverpool strain) were inoculated subcutaneously into the groin of 38 jirds *(Meriones unguiculatus)*. Adult worms were found mainly in the testes but also occurred in the heart and lungs. *Meriones libycus, Neotoma lepida, Dipodomys merriami*, and golden hamsters were also inoculated; patent infections were produced in 4 hamsters. Four of 5 *M. unguiculatus* developed patent infections when given larvae from mosquitoes fed on infected jirds.--From abstr.

Beck, Lee R., and Robert G. Anthony. METABOLIC AND BEHAVIORAL THERMOREGULATION IN THE LONG-TAILED VOLE, *MICROTUS LONGICAUDUS*. *J. Mammal.* 52(2): 404-412, 2 figs. May 1971. *WR 142: 24*
[Ohio State Univ., Columbus.]

Biggers, Charles J., and Wallace D. Dawson. SERUM PROTEIN POLYMORPHISMS IN *PEROMYSCUS POLIONOTUS* OF SOUTH CAROLINA. *J. Mammal.* 52(2): 376-385, 2 figs. May 1971. *WR 142: 24*
[Memphis State Univ., Memphis, Tenn.]

Bowdre, Larry P. LITTER SIZE IN *SIGMODON HISPIDUS*. *Southwestern Natur.* 16 (1): 126-128. 23 July 1971. *WR 142: 24*
[Mich. State Univ., East Lansing.]

Buhlow, Elke. UNTERSUCHUNGEN UEBER DEN HAARWECHSEL BEI SCHERMAUSEN, *ARVICOLA TERRESTRIS* (L., 1758). [INVESTIGATIONS ON THE MOLT OF *ARVICOLA TERRESTRIS* (L. 1758).] *Zool. Anz.* 184(1/2): 18-32, illus. 1970. [From Biol. Abstr. 52(12), 1971. In German with English summ.] *WR 142: 24*
[Univ. Kiel, Kiel, Germany.]

Cameron, Guy N. NICHE OVERLAP AND COMPETITION IN WOODRATS. *J. Mammal.* 52 (2): 288-296. May 1971. *WR 142: 24*
[Univ. Calif., Berkeley.] Abstract: The ranges of *Neotoma lepida* and *Neotoma fuscipes* overlap in the Mohave Desert of southeastern California. Food resources of these woodrats were analyzed to determine degree of overlap and other possible competitive interactions. In most aspects of habitat, the two species are distinctly separated, but analyses of food caches and stomach contents revealed that allopatric *N. fuscipes* and *N. lepida* both prefer *Quercus turbinella*, whereas *N. lepida* switches to *Juniperus californica* when sympatric with *N. fuscipes*. Behavioral interactions were investigated in laboratory test situations for evidence of a possible mechanism of competitive interaction. The results suggest that *N. fuscipes* is behaviorally dominant over *N. lepida*, and so maintains competitive superiority over the latter in exploitation of a preferred food resource.

Chew, Robert M. THE EXCRETION OF ^{65}Zn AND ^{54}Mn AS INDICES OF ENERGY METABOLISM OF *PEROMYSCUS POLIONOTUS*. *J. Mammal.* 52(2): 337-350, 3 figs. May 1971. *WR 142: 24*
[Univ. Southern Calif., Los Angeles.] Abstract: The retention of ^{65}Zn and ^{54}Mn were measured in *Peromyscus polionotus* that were subjected to different ambient temperatures or to forced exercise. Food intake and assimilation were measured simultaneously with the excretion of the intraperitoneally injected isotopes. The mean elimination constant *(k)* for ^{65}Zn of the exercised mice was significantly larger than that of the unexercised mice, although the metabolic rates of the two groups were not different. For the group retention curves, k for ^{65}Zn, days 20 to 38, and the area under the curve, days 0 to 38, varied inversely with temperature. The average metabolic rate of a group of mice was significantly correlated with the area under the group curve ($r = 0.96$). The excretion of ^{54}Mn did not vary significantly with temperature. Food intake,

food assimilation, and metabolic rate of individual mice were highly predictable from multiple correlations with ambient temperature and body weight, which together accounted for 96 to 98% of the variability. In only one case did a parameter of the zinc retention curve contribute more than an additional 2% to the predictability of the multiple correlations. In terms of simple correlations, food intake, food assimilation, and metabolic rate of individual mice were significantly related to k for ^{65}Zn, days 20 to 38, and to the area under the retention curve, but the predictabilities of the simple regressions were 58% or less.

Chobotar, Bill, Larry C. Anderson, John V. Ernst, and Datus M. Hammond. PATHOGENICITY OF *BESNOITIA JELLISONI* IN NATURALLY INFECTED KANGAROO RATS *(DIPODOMYS ORDII)* IN NORTHWESTERN UTAH. *J. Parasitol.* 56(1): 192-193, 2 figs. Feb. 1970. *WR 142: 25*
[Andrews Univ., Berrien Springs, Mich.]

Clulow, F. V., and F. F. Mallory. OESTRUS AND INDUCED OVULATION IN THE MEADOW VOLE, *MICROTUS PENNSYLVANICUS*. *J. Reprod. Fert.* 23(2): 341-343. 1970. [From Biol. Abstr. 52(8), 1971.] *WR 142: 25*
[Laurentian Univ., Sudbury, Ontario, Canada.]

Cooksey, Benjamin Franklin. CONDITIONS REQUIRED FOR REPRODUCTION OF *MICROTUS OCHROGASTER*, IN THE FIELD AND IN THE LABORATORY. *Ph.D. thesis, Kans. State Univ.* 109 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 25*

Crawford, Richard D. HIGH POPULATION DENSITY OF *MICROTUS OCHROGASTER*. *J. Mammal.* 52(2): 478. May 1971. *WR 142: 25*
[Northeast Mo. State Coll., Kirksville.] Monthly population estimates made during 1966-1969 indicated a definite cyclic pattern with a high of 429 voles per acre.

De Alencar, F. O. C. C. NOTAS SOBRE O RATO DE CANA *HOLOCHILUS SCIUREUS* WAGNER, NA REGIÃO DO CARIRI, CEARÁ. [NOTES ON THE SUGARCANE RAT IN THE CARIRI REGION OF CEARÁ.] *Rev. Brasil. Biol.* 29(4): 567-570, illus. 1969. [From Biol. Abstr. 52(4), 1971. In Portuguese with English summ.] *WR 142: 25*
[Univ. Fed., Fortaleza, Ceará, Brazil.]

Drobinskii, O. K. [THE ECONOMIC ACTIVITY OF MAN AND THE FORMATION OF RODENT POPULATIONS ON THE EXAMPLE OF THE VOLGA-AKHTYUBINSK FLOOD PLAIN.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(5): 25-29. 1970. [From Biol. Abstr. 52 (9), 1971. In Russian with English summ.] *WR 142: 25*

Ewel, Katherine Carter. ANNUAL REPRODUCTIVE CYCLE OF THE MALE POCKET GOPHER *(GEOMYS PINETIS)*. *Ph.D. thesis, Univ. Fla.* 78 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 25*

Garner, Herschel Whitaker. POPULATION DYNAMICS, REPRODUCTION, AND ACTIVITIES OF THE KANGAROO RAT, *DIPODOMYS ORDII*, IN WESTERN TEXAS. *Ph.D. thesis, Tex. Tech. Univ.* 85 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 25*

Genoways, Hugh H., and J. Knox Jones, Jr. SYSTEMATICS OF SOUTHERN BANNER-TAILED KANGAROO RATS OF THE *DIPODOMYS PHILLIPSII* GROUP. *J. Mammal.* 52(2): 265-287, 5 figs. May 1971. In English with Spanish summ. *WR 142: 25*
[Univ. Kans., Lawrence.]

Goertz, John W. AN ECOLOGICAL STUDY OF *MICROTUS PINETORUM* IN OKLAHOMA. *Amer. Midland Natur.* 86(1): 1-12. July 1971. *WR 142: 25*
[La. Tech Univ., Ruston.] Abstract: Population variation, habitat, movement, disappearance, sex ratio, reproduction and size of 515 pine mice *(Microtus pinetorum)* captured 1430 times were studied between October 1959 and September 1961

in Payne Co., Okla. Pine mice were more numerous after a *Sigmodon hispidus* "crash" and in areas not occupied by *Sigmodon*. Savanna edge, upland woods, grass-forb and bottomland woods, in that order, were favored plant associations based on number of captures. Other variations in apparent habitat selection are given. Home ranges, longest distances traveled and captures were greater for males than for females, for adults than for subadults, and on one grid than on another. Females disappeared more rapidly than males. Population turnover was 93.3% per year. Sex ratio was 242 (47%) males to 271 females at all age levels, but was 17 (40%) males to 26 females for 7-16 g subadults. Adults of both sexes are apparently capable of breeding throughout favorable years. The height of the reproductive season is from October to May with curtailment of reproductive activity during the summer. Each female may have 1-4 litters per year with 1-5 (mean, 2.6) individuals per litter. Pine mice weigh 2.3 g at birth, 8% of the female's body weight, and weigh an average of 27.1 g and are 127 mm long as adults. Other reproductive, sex, age and weight variations are given.

Grant, P. R. THE HABITAT PREFERENCE OF *MICROTUS PENNSYLVANICUS*, AND ITS RELEVANCE TO THE DISTRIBUTION OF THIS SPECIES ON ISLANDS. *J. Mammal.* 52(2): 351-361, 2 figs. May 1971. *WR 142: 26*

[McGill Univ., Montreal, Quebec, Canada.] Abstract: *Microtus pennsylvanicus* normally occurs in grassland habitat but is occasionally found in woodland, most frequently on islands. To help understand why the woodland is sometimes occupied, experiments were conducted in outdoor enclosures to study habitat preference and movement from grassland to woodland. A strong preference for grassland was demonstrated. Adults with previous experience in grassland and young voles without such experience, but held in the woodland for 2 weeks, were released in the woodland. All voles entered the grassland soon after release and remained there. In another enclosure a population was allowed to build up in the grassland. Movement into woodland occurred only at high density. It is believed that intraspecific interaction, associated with high density, induced the movement. It is suggested that this and the absence of competitors and predators are the chief factors responsible for the occurrence of *M. pennsylvanicus* (and other mammal species) in unusual habitat on islands.

Harling, John, and Milton Mc Claren. THE OCCURRENCE OF *ENDOGONE MACROCARPA* IN STOMACHS OF *PEROMYSCUS MANICULATUS*. *Syesis* 3(1/2): 155-159, illus. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 26*

[Simon Fraser Univ., Burnaby, British Columbia, Canada.]

Hasegawa, Megumi. [ON THE ROLE OF FIELD VOLES IN *ECHINOCOCCOSIS MULTILOCULARIS* IN HOKKAIDO.] *Rep. Hokkaido Inst. Pub. Health* 20: 73-78, illus. 1970. [From Biol. Abstr. 52(2), 1971. In Japanese with English summ.] *WR 142: 26*

[Hokkaido Inst. Public Health, Sapporo, Hokkaido, Japan.]

Hasler, Marilyn Jean Warkentin. FACTORS AFFECTING REPRODUCTION IN FEMALES OF *MICROTUS OCHROGASTER*. *Ph.D. thesis, Univ. Mo.* 106 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 26*

Hill, James Leslie. SPACE UTILIZATION OF *PEROMYSCUS*: SOCIAL AND SPATIAL FACTORS. *Ph.D. thesis, Mich. State Univ.* 96 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 26*

"Peromyscus maniculatus bairdi and P. leucopus novaboracensis."

Hooven, Edward F. POCKET GOPHER DAMAGE ON PONDEROSA PINE PLANTATIONS IN SOUTHWESTERN OREGON. *J. Wildl. Mgmt.* 35(2): 346-353. Apr. 1971. *WR 142: 26*

[Oreg. State Univ., Corvallis.] Abstract: Pocket gophers *(Thomomys monticola)* often make regeneration of ponderosa pine *(Pinus ponderosa)* difficult in Oregon, because, after logging, the gophers increase in substantial numbers. Efforts to reforest with ponderosa pine can be nullified if many pocket gophers are present, and in such localities control efforts must be constant. This study showed seedling survival of 87% in areas free of pocket gophers in contrast to 12% in areas occupied by pocket gophers. The conditions that create a

suitable pocket gopher habitat are unknown, but they are apparently influenced by the species of trees present before logging, various vegetative responses after logging, elevation, and soil characteristics.

Johnson, Sheldon Robert. THE THERMAL REGULATION, MICROCLIMATE, AND DISTRIBUTION OF THE MOUNTAIN BEAVER, *APLODONTIA RUFA PACIFICA* MERRIAM. *Ph.D. thesis, Oreg. State Univ.* 174 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 27*

Kahmann, Herman, and Ludwig Tiefenbacher. UEBER HAARWECHSEL UND HAARKLEID DES GARTENSCHLAEFERS *ELIOMYS QUERCINUS* LINNAEUS, 1766. [MOLTING OF THE DORMOUSE *ELIOMYS QUERCINUS QUERCINUS* LINNAEUS, 1766.] *Z. Säugetierk.* 35(2): 89-103, illus. 1970. [From Biol. Abstr. 52(1), 1971. In German with English summ.] *WR 142: 27*
[Zool. Inst. Muenchen, Munich, Germany.]

Kalinowska, Anna. TRAPPING OF *APODEMUS FLAVICOLLIS* AND *CLETHRIONOMYS GLAREOLUS* INTO A DOUBLE TRAP. *Acta Theriologica* 16(4): 73-78, 1 fig. Apr. 1971. In English with Polish summ. *WR 142: 27*
[Warsaw Univ., Warsaw, Poland.] Abstract: The experiment carried out on *Clethrionomys glareolus* (Schreber, 1780) and *Apodemus flavicollis* (Melchior, 1834) with double traps showed significant differences in the percentage of captures of each species depending on the content of one part of a trap. The lowest percentage of captures for both species was recorded when the trap contained initially an individual of *A. flavicollis*. On the other hand the percentage of captures of *A. flavicollis* was found almost the same for empty traps and for traps containing *C. glareolus*. The latter species was captured more often into traps with an individual of the same species than into empty traps.

Karabekov, M., and R. Reimov. [ECOLOGICAL AND MORPHOLOGICAL FEATURES OF "SYNANTHROPIC" AND NATURAL POPULATIONS OF SOME MURINE RODENTS.] *Vestn. Karakalpakskogo Fil. Akad. Nauk Uzb. SSR* 3.37. p. 88-91. 1969. [From Biol. Abstr. 52(9), 1971, from Referat. Zh., Biol., 1970, no. 71632. Transl. of Russian abstr.] *WR 142: 27*

Keys, J. E., Jr., and P. J. Van Soest. DIGESTIBILITY OF FORAGES BY THE MEADOW VOLE *(MICROTUS PENNSYLVANICUS)*. *J. Dairy Sci.* 53(10): 1502-1508. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 27*
[Animal Husbandry Res. Div., Beltsville, Md.]

Kisielewska, Krystyna. ECOLOGICAL ORGANIZATION OF INTESTINAL HELMINTH GROUPINGS IN *CLETHRIONOMYS GLAREOLUS* (SCHREB.) (RODENTIA): I. STRUCTURE AND SEASONAL DYNAMICS OF HELMINTH GROUPINGS IN A HOST POPULATION IN THE BIALOWIEZA NATIONAL PARK. *Acta Parasitol. Pol.* 18(13): 121-147, illus. 1970. [From Biol. Abstr. 52(12), 1971. In English with Polish summ.] *WR 142: 27*
[Dep. Parasitol., Polish Acad. Sci., Warsaw, Poland.]

Kisielewska, Krystyna. ECOLOGICAL ORGANIZATION OF INTESTINAL HELMINTH GROUPINGS IN *CLETHRIONOMYS GLAREOLUS* (SCHREB.) (RODENTIA): II. AN ATTEMPT AT AN INTRODUCTION OF HELMINTHS OF *C. GLAREOLUS* FROM THE BIALOWIEZA NATIONAL PARK INTO AN ISLAND OF THE BELDANY LAKE (MAZURIAN LAKELAND). *Acta Parasitol. Pol.* 18(23): 149-162, illus. 1970. [From Biol. Abstr. 52(11), 1971. In English with Polish summ.] *WR 142: 27*
[Dep. Parasitol., Polish Acad. Sci., Warsaw, Poland.] Bank voles (and their parasites) were introduced from the Bialowieza National Park into an island in Lake Beldany (previously cleared of the native bank vole population). The process of adapting to and infesting the new vole population in the island (the offspring of introduced voles), by the helminth species previously unknown in this environment is discussed.

Kisielewska, Krystyna. ECOLOGICAL ORGANIZATION OF INTESTINAL HELMINTH GROUPINGS IN *CLETHRIONOMYS GLAREOLUS* (SCHREB.) (RODENTIA): III. STRUCTURE OF HELMINTH GROUPINGS IN *C. GLAREOLUS* POPULATIONS OF VARIOUS FOREST BIOCOENOSES IN POLAND. *Acta Parasitol. Pol.* 18(22): 163-176. 1970. [From Biol. Abstr. 52 (12), 1971. In English with Polish summ.] *MR 142: 28*
[Dep. Parasitol., Polish Acad. Sci., Warsaw, Poland.]

Kisielewska, Krystyna. ECOLOGICAL ORGANIZATION OF INTESTINAL HELMINTH GROUPINGS IN *CLETHRIONOMYS GLAREOLUS* (SCHREB.) (RODENTIA): IV. SPATIAL STRUCTURE OF A HELMINTH GROUPING WITHIN THE HOST POPULATION. *Acta Parasitol. Pol.* 18(24): 177-196, illus. 1970. [From Biol. Abstr. 52(12), 1971. In English with Polish summ.] *MR 142: 28*
[Dep. Parasitol., Polish Acad. Sci., Warsaw, Poland.]

Kisielewska, Krystyna. ECOLOGICAL ORGANIZATION OF INTESTINAL HELMINTH GROUPINGS IN *CLETHRIONOMYS GLAREOLUS* (SCHREB.) (RODENTIA): V. SOME QUESTIONS CONCERNING HELMINTH GROUPINGS IN THE HOST INDIVIDUALS. *Acta Parasitol. Pol.* 18(25): 197-208, illus. 1970. [From Biol. Abstr. 52(12), 1971. In English with Polish summ.] *MR 142: 28*
[Dep. Parasitol., Polish Acad. Sci., Warsaw, Poland.]

Klingener, David. THE QUESTION OF CHEEK POUCHES IN *ZAPUS*. *J. Mammal.* 52 (2): 463-464. May 1971. *MR 142: 28*
[Univ. Mass., Amherst.] "The belief that cheek pouches exist in jumping mice is therefore based on a single, century-old, and erroneous observation."

Kratochvil, Josef. DER GESCHLECHTZYKLUS DER MÄNNCHEN VON *PITYMYS SUBTERRANEUS* UND *PITYMYS TATRICUS* (RODENTIA) IN DER HÖHEN TATRA. [THE SEXUAL CYCLE OF MALES OF *PITYMYS SUBTERRANEUS* AND *PITYMYS TATRICUS* (RODENTIA) IN THE HIGH TATRA MOUNTAINS.] *Zool. Listy* 19(1): 1-22, illus. 1970. [From Biol. Abstr. 52(10), 1971. In German with English summ.] *MR 142: 28*
[Inst. Vertebrate Zool., Brno, Czechoslovakia.]

Landry, Stuart O., Jr. THE RODENTIA AS OMNIVORES. *Quart. Rev. Biol.* 45(4): 351-372, illus. 1970. [From Biol. Abstr. 52(12), 1971.] *MR 142: 28*
[State Univ., Binghamton, N.Y.]

Lloyd, James A. WEIGHTS OF TESTES, THYMI, AND ACCESSORY REPRODUCTIVE GLANDS IN RELATION TO RANK IN PAIRED AND GROUPED HOUSE MICE *(MUS MUSCULUS)*. *Proc. Soc. Exp. Biol. & Med.* 137(1): 19-22, 2 figs. May 1971. *MR 142: 28*
[Univ. Tex. Med. School, Houston.] Summary: Indices of androgen activity in the form of reproductive organ and sexual accessory weights were correlated with winners, losers, and draws in brief paired encounters between male house mice *(Mus musculus)* and in mice from groups of six mice each that were housed together for 3 weeks. There were no significant differences in any of the parameters measured from the mice in brief paired encounters. Among the grouped mice the dominant mouse differed from almost all of the mice from other ranks with respect to testes, seminal vesicle, preputial, and thymus gland weights. Using an ordinal correlation coefficient, weights of seminal vesicles, preputials, and thymus glands correlated highly with rank as organ weights decreased in mice of descending rank.

Lussier, G., and F. M. Loew. NATURAL *HYMENOLEPIS NANA* INFECTION IN MONGOLIAN GERBILS *(MERIONES UNGUICULATUS)*. *Canadian Vet. J.* 11(5): 105-107, illus. 1970. [From Biol. Abstr. 52(3), 1971. In English with French summ.] *MR 142: 28*
[Inst. Microbiol. Hyg., Laval, Quebec, Canada.]

Markov, G. [ECOLOGO-ZOOGEOGRAPHICAL CHARACTERISTIC OF RODENTS IN BULGARIA.] *Vestn. Zool.* 4(4): 44-46. 1970. [From Biol. Abstr. 52(7), 1971. In Russian with English summ.] *MR 142: 28*

Marshall, Larry G., and Dianna V. Matthias. CORRELATIONS BETWEEN PHYSIOLOGICAL PARAMETERS OF BLOOD AND ALTITUDE IN *PEROMYSCUS MANICULATUS*. *J. Mammal.* 52(2): 449-450. May 1971. *WR 142: 29*
[Monash Univ., Clayton, Victoria, Australia.]

Mazurkiewicz, Maria. SHAPE, SIZE AND DISTRIBUTION OF HOME RANGES OF *CLETHRIONOMYS GLAREOLUS* (SCHREBER, 1780). *Acta Theriologica* 16(2): 23-60, 11 figs. Apr. 1971. In English with Polish summ. *WR 142: 29*
[Inst. Ecol., Polish Acad. Sci., Nowy Świat 72, Warsaw, Poland.] Abstract: Analysis was made of material obtained in 1966 and 1967 from studies of a free-living population with known dynamics of numbers and age structure. It was found that there is a relation between the examined features of the home range: shape, size, location in the study area, degree of overlapping and shift from the phenological time of the annual cycle, population numbers and social moment of entry of a cohort (a group of individuals of identical age). Due to the high level of numbers the location of home ranges in the area was more random and the ranges shifted to a lesser extent. The degree of elongation and the size of the home range decreased independently of dynamics of population numbers. The size and shape of the home range of the various cohorts depended on the time of their entry into the population: the later the cohort's entry into the population, the smaller and rounder the home ranges of its individuals. Within the cohorts analysed, males were found to possess larger home ranges than females.

M'Closkey, Robert Thomas. POPULATION TRENDS AND SPECIES DIVERSITY IN A CALIFORNIA RODENT COMMUNITY. *Ph.D. thesis, Univ. Calif.* (Irvine). 169 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 29*
The rodents comprising the fauna were *Dipodomys agilis agilis, Perognathus fallax fallax, P. longimembris pacificus, Peromyscus eremicus fraterculus, P. maniculatus gambelii, P. californicus insignis, Reithrodontomys megalotis longicaudus, Neotoma lepida intermedia* and *N. fuscipes macrotis.*

Miller, Donald Horace. AN ANALYSIS OF THE LOCAL DISTRIBUTION OF THE REDBACK VOLE, *CLETHRIONOMYS GAPPERI* (VIGORS), IN NORTHERN VERMONT AND CENTRAL CONNECTICUT. *Ph.D. thesis, Univ. Conn.* 406 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 29*

Moskvitina, N. S. [ECOLOGICAL FEATURES OF THE NORTHERN REDBACKED VOLE ON SOME ISLANDS IN LAKE CHANA.] *Uch. Zap. Tomsk. Gos. Pedagog. Inst.* 27: 127-130. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 71637. In Russian.] *WR 142: 29*

Murie, Jan O. DOMINANCE RELATIONSHIPS BETWEEN *PEROMYSCUS* AND *MICROTUS* IN CAPTIVITY. *Amer. Midland Natur.* 86(1): 229-230. July 1971. *WR 142: 29*
[Univ. Alberta, Edmonton, Alberta, Canada.] Abstract: Interspecific interactions between bisexual pairs of *Microtus pennsylvanicus* and bisexual pairs of *Peromyscus leucopus* and *P. maniculatus bairdii* were recorded in 12 1-hr trials in captivity. *Microtus* were subordinate in all six trials with *P. leucopus* and in one trial with *P. maniculatus bairdii.*

Olsen, Ronald Werner. SECONDARY HABITAT SELECTION IN THE WHITE-THROATED WOODRAT *(NEOTOMA ALBIGULA)*. *Ph.D. thesis, Univ. Wis.* 180 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 29*

Ōtsu, Shōei. [ON WOOD MICE (VOLES) IN YAMAGATA PREFECTURE: II. THE DISTRIBUTION OF WOOD MICE ACCORDING TO DIFFERENT TYPES OF THE FORESTS.] *Japanese J. Appl. Entomol. Zool.* 14(2): 85-88, illus. 1970. [From Biol. Abstr. 52(7), 1971. In Japanese with English summ.] *WR 142: 29*
[Forest Res. Inst. Yamagata Prefect., Sagae, Yamagata, Japan.]

Pelikan, Jaroslav. SEX RATIO IN THREE *APODEMUS* SPECIES. *Zool. Listy* 19(1): 23-34. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 29*
[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Peshev, T. DISTRIBUTION AND TAXONOMY OF *MICROTUS NIVALIS* MARTINS (MAMMALIA) IN BULGARIA. *Mammalia* 34(2): 252-268, illus. 1970. [From Biol. Abstr. 52(5), 1971. In English with French summ.] *WR 142: 30*

Pilyavskii, B. R. [DIURNAL AND SEASONAL ACTIVITY OF *MICROTUS SUBTERRANEUS* SELYS-LONGCH. IN THE HIGH MOUNTAINS OF THE UKRAINIAN CARPATHIANS.] *Vestn. Zool.* 4(2): 24-27, illus. 1970. [From Biol. Abstr. 52(3), 1971. In Russian with English summ.] *WR 142: 30*
[Poltava Pedagog. Inst., Poltava, USSR.]

Pinkham, Carlos A., and Stephen Meade. THE SOUTHEASTWARD MOVEMENT OF THE WESTERN HARVEST MOUSE *(REITHRODONTOMYS MEGALOTIS)* IN ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(3): 339-340. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 30*
[Univ. Ill., Urbana.]

Prakash, Ishwar, and A. P. Jain. ECO-TOXICOLOGY AND CONTROL OF INDIAN DESERT GERBIL, *MERIONES HURRIANAE* (JERDON). *J. Bombay Natur. Hist. Soc.* 66(2): 274-278. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 30*
[Centr. Arid Zone Res. Inst., Jodhpur, Rajasthan, India.]

Price, Edward. DIFFERENTIAL REACTIVITY OF WILD AND SEMI-DOMESTIC DEERMICE *(PEROMYSCUS MANICULATUS)*. *Anim. Behav.* 18(4): 747-752. 1970. *WR 142: 30*
[State Univ. Coll. Forestry, Syracuse, N.Y.]

Rajagopalan, P. K. A NOTE ON THE ARBOREAL NESTS OF SOME RODENTS. *Indian J. Med. Res.* 58(9): 1192-1194. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 30*
[Virus Res. Cent., Poona, Maharashtra, India.] *"Vandeleuria oleracea, Rattus rattus wroughtoni* and *Rattus blanfordi."*

Renault, P. LE CONTRÔLE DES POPULATIONS DE RONGEURS DANS LES PLANTATIONS DE PALMIER À HUILE. EXPÉRIENCE DE LA MALAISIE. [THE CONTROL OF RODENT POPULATIONS IN OIL PALM PLANTATIONS: EXPERIENCE OF MALAYSIA.] *Oleagineau* 25(10): 525-526. 1970. [From Biol. Abstr. 52(7), 1971. In French.] *WR 142: 30*

Sadleir, R. M. F. S. POPULATION DYNAMICS AND BREEDING OF THE DEERMOUSE *(PEROMYSCUS MANICULATUS)* ON BURNABY MOUNTAIN, BRITISH COLUMBIA. *Syesis* 3(1/2): 67-74, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 30*
[Simon Fraser Univ., Burnaby, British Columbia, Canada.]

Savidge, Irvin Ray. SOCIAL FACTORS CONTRIBUTING TO THE DEPARTURE OF *PEROMYSCUS MANICULATUS BAIRDI* FROM THEIR NATAL SITE. *Ph.D. thesis, Mich. State Univ.* 64 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 30*
Parental factors and individual differences contributing to the rate of natal site departure by young *Peromyscus maniculatus bairdi* were studied in the laboratory by using an electric shock barrier of 0.2 milli-amperes between a home cage and another cage. The number of juveniles crossing the barrier each day was recorded from 21 to 48 or 55 days of age. Parental factors and individual differences contribute to the rate of natal site departure of young deermice. The presence of an aggressive mother with a subsequent litter increases the rate of departure and the presence of sibs or a non-aggressive parent decreases the rate of departure.

Seed, John Richard, and Nezhat Khalili. THE EFFECT OF *TRYPANOSOMA GAMBIENSE* ON LOCOMOTOR RHYTHMS OF *MICROTUS MONTANUS*. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 312. Aug. 1970. Abstract only. *WR 142: 30*
[Tulane Univ., New Orleans, La.]

Stevens, Gary Leslie. SPATIAL-TEMPORAL RELATIONSHIPS OF THREE SPECIES OF SMALL MAMMALS IN A SALT MARSH COMMUNITY. *Ph.D. thesis, Univ. Calif.* (Davis). 90 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 31*

Three species of small mammals *(Peromyscus maniculatus, Reithrodontomys raviventris,* and *Mus musculus)* were studied from November 1967 to May 1968 for intra- and interspecific spatial-temporal relationships by using electrically monitored livetraps on a 5.5 acre grid of a salt marsh community of north San Pablo Bay in the San Francisco Bay complex.

Suslik, V. ROZBOR POSKODENIA SMREKOVCOV HRABOSOM LESNY *(CLETHRIONOMYS GLAREOLUS* SCHR.) V OKOLI ZVOLENA. [ANALYSIS OF DAMAGES ON THE EUROPEAN LARCH CAUSED BY THE RED-BACKED VOLE *(CLETHRIONOMYS GLAREOLUS)* IN THE VICINITY OF ZVOLEN, SLOVAKIA.] *Ved. Cas. Uvti Ustav Vedeckotech. Inform. Les.* 16(2): 153-164, illus. 1970. [From Biol. Abstr. 52(2), 1971. In Czech with Russian, German, French, and English summ.] *WR 142: 31*

Van Peenen, P. F. D., and George R. Healy. INFECTION OF *MICROTUS OCHROGASTER* WITH PIROPLASMS ISOLATED FROM MAN. *J. Parasitol.* 56(5): 1029-1031, 1 fig. Oct. 1970. *WR 142: 31*

[Nat. Naval Med. Center, Bethesda, Md.]

Visinescu, Niculina. EFECTUL DE GRUP AL TERMOREGLĂRII LA UNELE MAMIFERE SĂLBATICE. [THE GROUP EFFECT OF THERMOREGULATION IN SOME WILD MAMMALS.] *Stud. Cercet. Biol. Ser. Zool.* 21(1): 95-101, illus. 1969. [From Biol. Abstr. 52 (10), 1971. In Romanian with English summ.] *WR 142: 31*

[Inst. Biol. "Traian Săvulescu", Bucharest, Romania.] *"Clethrionomys glareolus* and *Microtus arvalis."*

Walhovd, Helge. AELDRE OG NYERE OBSERVATIONER AF HASSELMUSEN, *MUSCARDINUS AVELLANRIUS* (L. 1758), OG DENS REDER I DANMARK. [RECENT AND SOME FORMER OBSERVATIONS OF THE COMMON DORMOUSE *(MUSCARDINUS AVELLINARIUS* L. 1758*)* AND ITS NESTS IN DENMARK.] *Flora Fauna* 76(1): 21-27, illus. 1970. [From Biol. Abstr. 52 (5), 1971. In Danish with English summ.] *WR 142: 31*

[Aarhus Univ., Aarhus, Denmark.]

Watts, David Estes. BURROWING HABITS OF THE PLAINS POCKET GOPHER IN NORTH-CENTRAL AND NORTHWESTERN OKLAHOMA DURING THE FALL AND WINTER OF 1969-70. *Ph.D. thesis, Okla. State Univ.* 72 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31 (11), 1971.] *WR 142: 31*

Soil texture and vegetation were considered important determinants of gopher activity. Sand content of the soil in the northwestern area was greater than sand content of soil in the northcentral area. Apparently gophers are more abundant in the northwestern area due to sand soil and the abundance of desirable food plants. Land-use practices influenced gopher activity to a considerable extent. Gophers cannot be readily censused by mound-counts in areas where gopher activity is pronounced. It was estimated that there was an average of eight gophers per acre on the less-sandy soils of the northcentral area, and twelve gophers per acre on the sandy northwestern area.

Wierzbowska, Teresa, and Henryka Chelkowska. ESTIMATING SIZE OF HOME RANGE OF *APODEMUS AGRARIUS* (PALL.). *Ekol. Pol. Ser. A* 18(1): 1-12, illus. 1970. [From Biol. Abstr. 52(9), 1971. In English with Polish summ.] *WR 142: 31*

[Inst. Ecol., Warsaw, Poland.]

Wiley, Robert W. ACTIVITY PERIODS AND MOVEMENTS OF THE EASTERN WOODRAT. *Southwestern Natur.* 16(1): 43-54, 3 figs. 23 July 1971. *WR 142: 31*

[Tex. Technol. Univ., Lubbock.] Abstract: An automatic camera device, live-traps, and direct observations under red light were utilized in gathering information on activity periods and movements in a woodrat population. Woodrats were found most active from dusk to midnight with most activity occurring between the hours of 8:30 to 10:30 pm. No significant difference in activity was noted

between sexes. Activity was highest on nights of new and quarter moon phases and lowest on nights of full moon. Adults generally dominated juveniles and subadults. Woodrats usually restricted their foraging activities within a diameter of 171 ft. Movements were generally confined to areas with overhead vegetation or rock outcroppings.

Wolfe, James L. EXPERIMENTS ON NEST-BUILDING BEHAVIOUR IN *PEROMYSCUS* (RODENTIA: CRICETINAE). *Anim. Behav.* 18(4): 613-615. 1970. *MR 142: 32*
[Miss. State Univ., State College.] Summary: Previous studies reflect conflicting views on the relative importance of major climatic factors and microhabitat in selection for nest-building behaviour in the genus *Peromyscus*. In my study, populations of the *leucopus* species group (*P. leucopus* and *P. gossypinus*) from Illinois, Mississippi, and Florida were found not to differ consistently. Populations of *P. polionotus*, a burrow-nesting form, from Mississippi and Florida scored lower on tests designed to measure nest-building tendency than members of the other two species. I conclude that the evolution of nest-building behaviour in this genus was influenced more by microhabitat than by differences in climate.

Wright, Vernon Lee. POPULATION DYNAMICS OF CRICETIDS IN SOUTHEASTERN WASHINGTON. *Ph.D. Thesis, Wash. State Univ.* 122 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *MR 142: 32*
Population dynamics of *Peromyscus maniculatus*, *Microtus montanus*, and *M. longicaudus* were studied from July 1968 to June 1970 near Pullman, Washington.

Wrigley, Robert Ernest. BIOLOGY AND SYSTEMATICS OF THE WOODLAND JUMPING MOUSE, *NAPAEOZAPUS INSIGNIS*. *Ph.D. thesis, Univ. Ill.* (Urbana-Champaign). 184 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *MR 142: 32*

Yasarol, Sevket. AN INVESTIGATION ON RODENTS (RODENTIAE-MURIDAE) AS *LEISHMANIA RESERVOIR IN TURKEY*. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 374. Aug. 1970. Abstract only. *MR 142: 32*
[Aegean Univ., Bornova-Izmir-Turkey.]

Yocom, Charles F. INVASION OF HUMBOLDT AND DEL NORTE COUNTIES OF NORTHWESTERN CALIFORNIA BY PORCUPINES. *Murrelet* 52(1): 1-6, 2 figs. Jan.-Apr. 1971. *MR 142: 32*

Zuevskii, A. P. [GAMASID MITES FROM NESTS OF THE WATER VOLE OF THE TJUMEN DISTRICT.] *Parazitologiya* 4(4): 352-358. 1970. [From Biol. Abstr. 52(4), 1971. In Russian with English summ.] *MR 142: 32*

RATTUS & MUS

Berry, R. J. THE NATURAL HISTORY OF THE HOUSE MOUSE. *Field Stud.* 3(2): 219-262, illus. 1970. [From Biol. Abstr. 52(7), 1971.] *MR 142: 32*
[Roy. Free Hosp. Sch. Med., London, England.]

Bisseru, B. COMPARISON OF THE RAT LUNGWORM, *ANGIOSTRONGILUS CANTONENSIS* ("EOSINOPHILIC MENINGOENCEPHALITIS") THROUGHOUT THE STATES OF MALAYA. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 30-31. Aug. 1970. Abstract only. *MR 142: 32*
[Univ. Malaya, Kuala Lumpur, Malaya.] *"Rattus jalorensis, R. argentiventer, and R. norvegicus."*

Brooks, Joe E., and Alan M. Bowerman. ESTROGENIC STEROID USED TO INHIBIT REPRODUCTION IN WILD NORWAY RATS. *J. Wildl. Mgmt.* 35(3): 444-449, 2 figs. July 1971. *WR 142: 33*

[N.Y. State Dep. Health, Troy.] Abstract: An estrogenic steroid, 17α-ethynylestradiol-3-cyclopentyl ether, was evaluated for voluntary oral acceptance and reproductive inhibition in caged and free-living wild Norway rats *(Rattus norvegicus)*. The estrogen, at concentrations of 0.002 and 0.02%, was repeatedly consumed at effective dosage levels when a different bait-base was used at each offering. Caged rats had a choice between the estrogen bait and their standard diet, at each offering. A refuse-disposal site containing about 600 rats was baited six times, 2 weeks apart, with various grain and cereal feeds containing 0.02% of the estrogen. Rats trapped from populations on the treated and control disposal sites had significant differences in the number of nulliparous females, number of pregnancies, number of placental scar generations, and total parity. A slow decline in bait acceptance was observed in both laboratory and field trials.

Edgcomb, John H., and Carl M. Johnson. NATURAL INFECTION OF *RATTUS RATTUS* BY *TRYPANOSOMA CRUZI* IN PANAMA. *Amer. J. Trop. Med. Hyg.* 19(5): 767-769, illus. 1970. [From Biol. Abstr. 52(3), 1971.] *WR 142: 33*

[Gorgas Mem. Lab., Panama City, Panama.]

Ericsson, R. J., H. E. Downing, R. E. Marsh, and W. E. Howard. BAIT ACCEPTANCE BY RATS OF MICROENCAPSULATED MALE STERILANT ALPHA-CHLOROHYDRIN. *J. Wildl. Mgmt.* 35(3): 573-576. July 1971. *WR 142: 33*

[Upjohn Co., Kalamazoo, Mich.] Abstract: Alpha-chlorohydrin (U-5897) induces a permanent lesion in the caput epididymidis of domestic and wild rats *(Rattus norvegicus)*, with subsequent sterility. Bait with a one percent concentration of this chemosterilant was consumed in sufficient amounts to bring about sterility or death, even though feed intake was reduced. Microencapsulation of U-5897 significantly *($P<0.01$)* improved bait acceptance.

Hoi-Sen, Yong. A MALAYAN VIEW OF *RATTUS EDWARDSI* AND *R. SABANUS* (RODENTIA: MURIDAE). *Zool. J. Linnean Soc.* 49(4): 359-370, illus. 1970. [From Biol. Abstr. 52(8), 1971.] *WR 142: 33*

[Univ. Malaya, Kuala Lumpur, Malaysia.]

Lindsey, Gerald D., Roger D. Nass, and Glenn A. Hood. AN EVALUATION OF BAIT STATIONS FOR CONTROLLING RATS IN SUGARCANE. *J. Wildl. Mgmt.* 35(3): 440-444. July 1971. *WR 142: 33*

[Bur. Sport Fisheries & Wildl., Hilo, Hawaii.] Abstract: To estimate the effectiveness of bait stations in controlling rat populations in sugarcane fields and adjacent wastelands, we placed bait stations filled with tracer-labeled bait of oat groats treated with demethylchlortetracycline (DMCT) along field perimeters for 14 to 21 days, then snap-trapped for 6 to 9 days. Only 56% of 148 rats captured along the field perimeters, and none of 65 rats captured 200 to 400 feet inside the fields, had consumed bait from the stations. The data indicate that although bait stations are effective in controlling black rats *(Rattus rattus)*, which live primarily in wastelands, they are not effective in controlling Norway *(R. norvegicus)* or Polynesian rats *(R. exulans)*.

Mischler, Terrence W., Patricia Welaj, and Paul Nemith. BIOLOGICAL EVALUATION OF TWO ESTROGENIC STEROIDS AS POSSIBLE RODENT CHEMOSTERILANTS. *J. Wildl. Mgmt.* 35(3): 449-454. July 1971. *WR 142: 33*

[Warner-Lambert Res. Inst., Morris Plains, N.J.] Abstract: Two estrogenic steroids, W3566 and mestranol, were evaluated in a series of biological parameters to determine their suitabilities as rodent chemosterilants. Single oral doses (10 to 10,000 µg) of W3566 provided more prolonged and intense estrogenic activity than did similar doses of mestranol as judged by maintenance of estrogenic vaginal smears in ovariectomized laboratory rats, delay of recovery to fertility in normal female rats, and termination of pregnancy in rats treated

on days 1 or 8 but not on day 4. Mothers treated on day 1 of lactation did not produce offspring with a marked alteration of fertility when compared with controls, although offspring from mothers treated with W3566 may have demonstrated some slight reduction in fertility. W3566 appears to be a better choice than mestranol as a potential rodent chemosterilant. The difficulty of repetitive dosing, arising from the problems of bait acceptance, makes an estrogen with more prolonged activity than mestranol especially desirable.

Musser, Guy G. SPECIES-LIMITS OF *RATTUS BRAENA*, A MURID RODENT OF NORTHEASTERN INDIA AND NORTHERN BURMA. *Amer. Mus. Nov.* 2406: 1-27, illus. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 34*
[Amer. Mus. Nat. Hist., New York, N.Y.]

Nass, Roger D., Glenn A. Hood, and Gerald D. Lindsey. FATE OF POLYNESIAN RATS IN HAWAIIAN SUGARCANE FIELDS DURING HARVEST. *J. Wildl. Mgmt.* 35(2): 353-356. Apr. 1971. *WR 142: 34*
[Bur. Sport Fisheries & Wildl., Hilo, Hawaii.] Abstract: Miniature transmitters were attached to 35 Polynesian rats *(Rattus exulans)* from two sugarcane fields, and the rats were released at points of capture 2 days before harvesting operations began. The signals were monitored until each rat's fate was determined or its transmitter failed. Twenty-two Polynesian rats were successfully monitored throughout the harvesting operations. During the preliminary step of burning the cane, air temperatures at ground levels ranged from 38 C to 64 C and did not kill the rats or affect operation of the transmitters. Seventeen rats (77%) were killed by harvesting or processing machinery, and five (23%) survived. Mongooses *(Herpestes auropunctatus)* killed three of these five within 2 days after the cane had been removed near their burrows.

Nass, Roger D., Glenn A. Hood, and Gerald D. Lindsey. INFLUENCE OF GULCH-BAITING ON RATS IN ADJACENT SUGARCANE FIELDS. *J. Wildl. Mgmt.* 35(2): 357-360. Apr. 1971. *WR 142: 34*
[Bur. Sport Fisheries & Wildl., Hilo, Hawaii.] Abstract: Natural gulches that surround most sugarcane fields in Hawaii harbor three species of rats that infest the fields: Polynesian *(Rattus exulans)*, Norway *(R. norvegicus)*, and black *(R. rattus)* rats. A tracer-labeled bait (oat groats treated with demethylchlortetracycline) was aerially broadcast over three gulches to determine the proportion of rats accepting bait in the gulches and adjacent fields. Eighty-seven to 96% of the rats trapped from the gulches and at a distance of 50 feet into the fields were marked, indicating that the rats consumed bait from the gulches. At 450 feet into the fields, 60% of the Polynesian rats in young sugarcane were marked, but only 29% trapped in mature cane were marked. Since the Polynesian rat is the prevalent species in most damage situations, these data indicate that fields and gulches should be baited for effective rat control in mature sugarcane.

Popov, N. A. [SOME REGULARITIES OF DISTRIBUTION OF *RATTUS NORVEGICUS* IN VOLGOGRAD.] *Zool. Zh.* 49(6): 943-944. 1970. [From Biol. Abstr. 52(1), 1971. In Russian with English summ.] *WR 142: 34*

Romanov, I. V. [ROLE OF THE BROWN RAT IN THE DISTRIBUTION OF TRICHINELLOSIS IN THE USSR.] *Zool. Zh.* 49(9): 1391-1397. 1970. [From Biol. Abstr. 52(8), 1971. In Russian with English summ.] *WR 142: 34*
[Gorki Med. Inst., Gorki, USSR.]

Steiniger, F. WANDERZUEGE DER WANDERRATTEN. [MIGRATIONS OF RATS.] *Gesundheitsw. Desinfek.* 60(11): 158-160. 1968. [From Biol. Abstr. 52(10), 1971. In German.] *WR 142: 34*
[Auestrasse 30, Hannover, Germany.] Various reports have been given on the migration of rats in the Philippines, Germany, Norway and other countries. The importance of considering this behavior in formulating control measures is discussed.

Uchida, Teru Aki. RAT-CONTROL PROCEDURES ON THE PACIFIC ISLANDS, WITH SPECIAL REFERENCE TO THE EFFICIENCY OF BIOLOGICAL CONTROL AGENTS: II. EFFICIENCY OF THE JAPANESE WEASEL, *MUSTELA SIBIRICA ITATSI* TEMMINCK AND SCHLEGEL, AS A RAT-CONTROL AGENT IN THE RYUKYUS. *J. Fac. Agr. Kyushu Univ.* 15(4): 355-385, illus. 1969. [From Biol. Abstr. 52(5), 1971. In (English) with French summ. *WR 142: 36*
[Kyushu Univ., Fukuoka, Japan.]

Yabe, Tatsuo, Kiyoki Moriya, and Fumio Harada. [ECOLOGICAL STUDIES ON HOUSE RATS AND MICE: I. AN EXAMINATION ON MOLAR WEAR OF ALBINO RATS FOR AN AGE INDEX.] *Japanese J. Sanit. Zool.* 21(1): 78-81, illus. 1970. [From Biol. Abstr. 52(4), 1971. In Japanese with English summ.] *WR 142: 36*
[Kanagawa Prefect. Pub. Health Lab., Yokohama, Japan.]

SCIURIDS

Clark, Tim W. NOTES ON THE BIOLOGY OF THE THIRTEEN-LINED GROUND SQUIRREL IN THE LARAMIE PLAINS, WYOMING. *Southwestern Natur.* 15(4): 499-502. 25 May 1971. *WR 142: 36*
[Wis. State Univ., Medford.] Habitat, seasonal activity, reproduction, and food of *Spermophilus tridecemlineatus.*

Dasgupta, B., Amal Chatterjee, and H. N. Ray. COMPARATIVE ACCOUNT OF THE MEROCYSTS SEEN IN THE HIMALAYAN FLYING SQUIRRELS, WITH A NOTE ON THE IDENTITY OF THE PARASITES. *Parasitology* 61(3): 411-415 + 2 pls. Dec. 1970. *WR 142: 36*
[Darjeeling Gov. Coll., Darjeeling, India.] *"Petauriста inornatus* and *P. magnificus."*

Fall, Michael W. SEASONAL VARIATIONS IN THE FOOD CONSUMPTION OF WOODCHUCKS *(MARMOTA MONAX). J. Mammal.* 52(2): 370-375, 2 figs. May 1971. *WR 142: 36*
[Bur. Sport Fisheries & Wildl., Denver Federal Center, Denver, Colo.]
Abstract: Food consumption of 155 woodchucks *(Marmota monax)* was measured immediately after capture to determine whether a seasonal rhythm obtained in feeding of a natural population. Food intake of adults was lowest in March. It reached a maximum in May, then declined through the summer; some individuals increased food intake temporarily in late autumn. Comparative data from a laboratory colony showed that a similar rhythm occurred under conditions of constant temperature and photoperiod. Variability in food consumption maxima associated with different age groups, considered in the context of available life history information, suggested that the rhythm had a period somewhat less than 1 year.

Graybill, Donald Lee. FOOD RESOURCES AND INGESTION RATES OF *TAMIAS STRIATUS* POPULATIONS. *Ph.D. thesis, Univ. Pittsburgh.* 226 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 36*

Jones, J. Knox, Jr., and Hugh H. Genoways. NOTES ON THE BIOLOGY OF THE CENTRAL AMERICAN SQUIRREL, *SCIURUS RICHMONDI. Amer. Midland Natur.* 86(1): 242-246, 1 fig. July 1971. *WR 142: 36*
[Univ. Kans., Lawrence.] Abstract: Additional specimens of *Sciurus richmondi* are reported, along with comments on variation, distribution, reproduction and molt in this little known squirrel. As presently understood, *S. richmondi* occurs only in the Caribbean rain forests of Nicaragua. Significant secondary sexual variation in adults was found only in zygomatic breadth, in which females are the larger. Available evidence reveals that the breeding season extends at least from February to September, and suggests two seasonal molts annually.

Jordan, James S. YIELD FROM AN INTENSIVELY HUNTED POPULATION OF EASTERN FOX SQUIRRELS. *USDA Forest Serv. Res. Pap. NE-186.* 8 p. 1971. *WR 142: 36*
Abstract: Sixty hunting trips (141 hours) to a 68-acre oak-hickory woods in west-central Illinois produced a harvest of 139 fox squirrels *(Sciurus niger)*, an average yield of 2.0 squirrels per acre. Squirrels were hunted on 37 days of a 61-day open season. Juvenile squirrels constituted 72.5 percent of the total bag, adult females 14.5 percent. Eighty-five percent of adult females bagged were lactating. The estimated populations at the beginning and the end of the hunting season were 240 and 96 squirrels, respectively, indicating a 57.9 percent rate of exploitation of the prehunt population.

Karpukhin, I. P. [THE BIOLOGICAL FOUNDATIONS FOR THE EFFICIENT USE OF SQUIRREL STOCKS.] *Tr. Kirov. Sel'skokhoz. Inst.* 21(46): 3-16. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 71747. In Russian.] *WR 142: 36*

Krull, John N. RESPONSE OF CHIPMUNKS AND RED SQUIRRELS TO COMMERCIAL CLEARCUT LOGGING. *N.Y. Fish & Game J.* 17(1): 58-59, 1 fig. Jan. 1970. *WR 142: 36*
[Southern Ill. Univ., Carbondale.] No major detrimental effects on red squirrels and chipmunks as a result of commercial clearcut logging of northern hardwoods.

Kryzhanovskii, V. I. [SEASONAL CHANGES OF THE WOOLY COVER IN *SCIURUS VULGARIS EXALBIDUS* PALL.] *Vestn. Zool.* 4(2): 28-34, illus. 1970. [From Biol. Abstr. 52(4), 1971. In Russian with English summ.] *WR 142: 36*
[Inst. Zool., Acad. Sci. Ukrainian SSR, Kiev, USSR.]

Marsh, Rex E., and Walter E. Howard. CARE OF GROUND SQUIRRELS *(SPERMOPHILUS* SPP.) IN CAPTIVITY. *Lab. Anim. Care* 21(3): 367-371, 3 figs. June 1971. *WR 142: 36*
[Univ. Calif., Davis.]

Müller-Schwarze, Dietland, and Christine Müller-Schwarze. RESPONSES OF CHIPMUNKS TO MODELS OF AERIAL PREDATORS. *J. Mammal.* 52(2): 456-458, 1 fig. May 1971. *WR 142: 36*
[Utah State Univ., Logan.] *Eutamias speciosus* usually responded less to the T-shaped plexiglass piece (control) than to the discs and the model hawks used in the tests. But neither shape nor size of the stimulus influenced the reactions.

Parker, J. C., and R. B. Holliman. OBSERVATIONS ON PARASITES OF GRAY SQUIRRELS DURING THE 1968 EMIGRATION IN NORTH CAROLINA. *J. Mammal.* 52(2): 437-441. May 1971. *WR 142: 36*
[Va. Polytech. Inst., Blacksburg.]

Popov, A. V., and E. P. Yakovlev. [STAGGERED CHANGES IN RELATIVE BODY WEIGHT OF THE MOUNTAIN MARMOT.] *Dokl. Akad. Nauk Tadzh. SSR* 13(4): 58-60, illus. 1970. [From Biol. Abstr. 52(9), 1971. In Russian.] *WR 142: 36*
"Marmota caudata."

Sheets, Robert G., Raymond L. Linder, and Robert B. Dahlgren. BURROW SYSTEMS OF PRAIRIE DOGS IN SOUTH DAKOTA. *J. Mammal.* 52(2): 451-453, 1 fig. May 1971. *WR 142: 36*
[S. Dak. Coop. Wildl. Res. Unit, Brookings.] *"Cynomys ludovicianus."*

Short, Henry L., and William B. Duke. SEASONAL FOOD CONSUMPTION AND BODY WEIGHTS OF CAPTIVE TREE SQUIRRELS. *J. Wildl. Mgmt.* 35(3): 435-439, 3 figs. July 1971. *WR 142: 36*
[Southern Forest Exp. Sta., Nacogdoches, Tex.] Abstract: Captive subadult and adult gray *(Sciurus carolinensis)* and fox squirrels *(S. niger)* ate a commercial laboratory chow at high rates in early autumn and at reduced rates

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during midwinter and midsummer. Seasonal food consumption patterns may be related to basal metabolic activity, which is apparently greatest in early autumn and reduced during summer. Body weights of adult squirrels seem to cycle seasonally as do food-consumption rates. Smaller gray squirrels consume relatively more food, apparently reflecting their greater metabolic demands, than do the larger fox squirrels.

BEAVER

Ernst, John V., William L. Cooper, and Merrill J. Frydendall. *EIMERIA SPREHNI* YAKIMOFF, 1934, AND *E. CAUSEYI* SP. N. (PROTOZOA: EIMERIIDAE) FROM THE CANADIAN BEAVER, *CASTOR CANADENSIS*. *J. Parasitol.* 56(1): 30-31, 2 figs. Feb. 1970. *WR 142: 37*
[Agr. Res. Serv., Auburn, Ala.]

Hediger, Heini. ZUM FORTPFLANZUNGSVERHALTEN DES KANADISCHEN BIBERS *(CASTOR FIBER CANADENSIS)*. [THE BREEDING BEHAVIOUR OF THE CANADIAN BEAVER *(CASTOR FIBER CANADENSIS)*.] *Forma Functio* 4. p. 336-351, illus. 1970. [From Biol. Abstr. 52(11), 1971. In German with French and English summ.] *WR 142: 37*
[Zoo, Zürich, Switzerland.]

Safonov, V. G. [EXPERIENCE FROM A FIXED-STATION STUDY OF THE EFFECT OF TAKING BEAVERS ON THE CONDITION OF THE COLONY.] *Tr. Kirov. Sel'skokhoz. Inst.* 21(46): 16-28. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I748. In Russian.] *WR 142: 37*

MUSKRAT & NUTRIA

Larin, B. A., and N. G. Mokhov. [A COMPARATIVE EVALUATION OF METHODS FOR DETERMINING THE AGE OF MUSKRATS.] *Tr. Kirov. Sel'skokhoz. Inst.* 21(46): 106-118. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I542. In Russian.] *WR 142: 37*

FUR ANIMALS, GENERAL

Payne, Neil F. NEWFOUNDLAND AND LABRADOR FUR GUIDE. *Newfoundland & Labrador Wildl. Serv., Dep. Mines, Agr. & Resour.* 45 p., 18 figs. + 30 p. of illustrations. 1969. *WR 142: 37*
Contents: Trapping as a business, Types of traps, Trap equipment, Trap preparation, Baits and scents, Know your animals, Prime fur time, Fur grading, Pelt preparation, Packing and shipping, Marketing, Sources of trapping supplies, Tanning, and Trap and snare set illustrations.

BEARS

Gard, Richard. BROWN BEAR PREDATION ON SOCKEYE SALMON AT KARLUK LAKE, ALASKA. *J. Wildl. Mgmt.* 35(2): 193-204, 5 figs. Apr. 1971. *WR 142: 37*
[Univ. Calif., Berkeley.] Abstract: Effects of predation by brown bears *(Ursus arctos)* on sockeye salmon *(Oncorhynchus nerka)* were studied at Grassy Point Creek, a tributary of Karluk Lake on Kodiak Island, Alaska, during the summers of 1964 and 1965. In 1964 bears were allowed free access to the stream, but in 1965 an attempt was made to exclude them with an electric fence. Bears were efficient predators in the stream, killing up to 79% of the salmon in 1964; however, only 9.6% of the dead females sampled were unspawned bear-killed fish. The maximum estimate of eggs lost to bear predation in 1964 was about 1 million, compared with a total loss, from all causes, of 8 million potential eggs. As a result of certain behavioral patterns of sockeye salmon, bears usually take

spawned-out rather than unspawned females. The ratio of males to females in each year's escapement approached 1:1; the ratio among bear kills was about 3:2. Males acted as a buffer against predation on females. The fence reduced bear predation by two-thirds. It is concluded that bear predation has little adverse effect on the production of sockeye salmon.

Larsen, Thor. POLAR BEAR *(URSUS MARITIMUS)* INVESTIGATIONS IN SVALBARD 1968 TO 1969: A PROGRESS REPORT. III. *Norsk Polarinst. Arbok 1969.* p. 70-79, illus. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 38*
[Univ. Oslo, Frederiksgt. 3, Oslo, Norway.]

Larsen, Thor. SEXUAL DIMORPHISM IN THE MOLAR ROWS OF THE POLAR BEAR. *J. Wildl. Mgmt.* 35(2): 374-377, 3 figs. Apr. 1971. *WR 142: 38*
[Univ. Oslo, Frederiksgt. 3, Oslo, Norway.] Abstract: The upper and lower molar tooth rows in polar bears *(Ursus maritimus)* from the Svalbard (Spitsbergen) region exhibited sex-related differences in length, with an overlap of about five percent. Lengths of rows are not correlated with age, except that they tend to be shorter in older age-classes. The method is particularly useful for sex classification of specimens in the younger age groups, after about 8 months of age when the permanent dentition allows measurement of the molar rows, and before the canines are fully developed and sex-related dimorphism in the skull is not yet evident. Measurements of molar rows can be taken in the field before the skulls have been cleaned.

Pulliainen, Erkki. SUOMESSA VUONNA 1969 KAADETUT KARHUT JA ILVEKSET. [THE NUMBER OF BEAR *(URSUS ARCTOS)* AND LYNX *(LYNX LYNX)* KILLED IN FINLAND IN 1969.] *Suomen Riista* 23: 147-151. 1971. In Finnish with English summ. *WR 142: 38*
In 1969 there was a legal harvest of 51 bears and 9 lynx.

Wikan, Steinar. BJORN I SOR-VARANGER. [BEARS IN SOUTH-VARANGER.] *Fauna* (Oslo) 23(2): 85-101, illus. 1970. [From Biol. Abstr. 52(3), 1971. In Norwegian with English summ.] *WR 142: 38*

RACCOON, RINGTAIL, COATI

Bigler, William J. SEROLOGIC EVIDENCE OF VENEZUELAN EQUINE ENCEPHALITIS VIRUS INFECTIONS IN RACCOONS OF SOUTH CENTRAL FLORIDA. *J. Wildl. Dis.* 7(3): 166-170, 1 fig. July 1971. *WR 142: 38*
[Fla. Div. Health, Jacksonville.] Abstract: A presumed second human case of Venezuelan equine encephalitis (VEE) approximately 175 miles north of the Everglades National Park, prompted an epizootiological survey to document the presence and distribution of VEE virus in small mammals throughout the state. Sera from 339 small mammals from 25 counties in Florida were tested for hemagglutination-inhibiting antibodies against VEE, eastern encephalitis (EE) and St. Louis encephalitis (SLE) viruses. Sera reactive to VEE in HI tests were also examined for neutralizing antibody to VEE and EE. Significant HI and neutralizing antibody to VEE virus was detected in raccoons *(Procyon lotor)*, cotton rats *(Sigmodon hispidus)*, cotton mice *(Peromyscus gossypinus)* and an opossum *(Didelphis marsupialis)* in various habitats along the Gulf and Atlantic Coasts of Florida. These data indicated that (1) VEE virus may be widespread in south central Florida; perhaps endemic in Indian River County (2) Raccoons may be excellent indicators of VEE activity in a statewide arbovirus monitoring system.

Schnell, Jay H. REST SITE SELECTION BY RADIO-TAGGED RACCOONS. *J. Minn. Acad. Sci.* 36(2/3): 83-88, illus. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 38*
[Tall Timbers Res. Sta., Tallahassee, Fla.]

Field, Ronald J. WINTER HABITS OF THE RIVER OTTER *(LUTRA CANADENSIS)* IN MICHIGAN. *Mich. Acad.* 3(1): 49-58, illus. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 39*
[Mich. State Univ., East Lansing.]

Gerell, Rune. HOME RANGES AND MOVEMENTS OF THE MINK *MUSTELA VISON* SCHREBER IN SOUTHERN SWEDEN. *Oikos* 21(2): 160-173, illus. 1970. [From Biol. Abstr. 52(11), 1971. In English with Russian summ.] *WR 142: 39*
[Univ. Lund, Lund, Sweden.]

Jensen, Annelise, and Birger Jensen. HUSMÅREN *(MARTES FOINA)* OG MÅRJAGTEN I DANMARK 1967/68. [THE STONE MARTEN *(MARTES FOINA)* IN DENMARK.] *Danske Viltundersøgelser* 15. 44 p., 8 figs. 1970. In Danish with English summ. *WR 142: 39*
In 1967/68 about 1500 stone martens were harvested. Only 4 out of 59 martens examined carried rabies infection while 185 out of 359 foxes examined for rabies reacted positively.--From summ.

Kotov, V. A. [THE ECOLOGY OF THE KAMCHATKA SABLE.] *Sb. Nauch.-Tekh. Inform. Vses. Nauch.-Issled. Inst. Okhotnich'ego Khoz. Zverovod.* 27. p. 5-11. 1969. [From Biol. Abstr. 52(12), 1971, from Referat. Zh., Biol., 1970, no. 7I651.] *WR 142: 39*

Krasnovskii, L. I. [A POSITIVE CORRELATION BETWEEN THE ABUNDANCE OF PINE MARTENS AND CLEAN CUTTINGS OF EUROPEAN FORESTS NORTH OF THE USSR.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(3): 7-15, illus. 1970. [From Biol. Abstr. 52(4), 1971. In Russian with English summ.] *WR 142: 39*

Pollock, G. A. THE SOUTH ISLAND OTTER: A REASSESSMENT. *New Zealand Ecol. Soc. Proc.* 17: 129-135. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 39*
[18 Landsdowne Terrace, Christchurch, New Zealand.]

Schnurrenberger, Paul R., Russell J. Martin, and John M. Koch. RABIES IN ILLINOIS SKUNKS. *J. Amer. Vet. Med. Ass.* 157(10): 1336-1342, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 39*
[Ill. Dep. Public Health, Springfield.]

Sokolov, A. S., and N. I. Sokolov. [SOME SPECIFIC FEATURES OF THE LOCOMOTOR ORGANS OF RIVER- AND SEA OTTERS ASSOCIATED WITH THEIR MODE OF LIFE.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(5): 5-17. 1970. [From Biol. Abstr. 52(10), 1971. In Russian with English summ.] *WR 142: 39*

Stockdale, P. H. G. THE DEVELOPMENT, ROUTE OF MIGRATION, AND PATHOGENESIS OF *PEROSTRONGYLUS PRIDHAMI* IN MINK. *J. Parasitol.* 56(3): 559-566, 8 figs. June 1970. *WR 142: 39*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: Evidence suggests that infective larvae of *P. pridhami* in mink *(Mustela vison)* migrate through the stomach wall, cross the peritoneal cavity, traverse the diaphragm, and penetrate the visceral pleura of the lungs within 24 hr after infection. The third molt occurs approximately 3 days, and the final molt by 7 days, after infection. Granulomata formed around discarded cuticle of larvae cause bronchiolitis obliterans of the respiratory and terminal bronchioles. *P. pridhami* adults elicit a mild bronchiolitis of the respiratory and terminal bronchioles. The prepatent period is approximately 3 weeks.

Stockdale, P. H. G., and Roy C. Anderson. THE DEVELOPMENT, ROUTE OF MIGRATION, AND PATHOGENESIS OF *FILAROIDES MARTIS* IN MINK. *J. Parasitol.* 56(3): 550-558, 12 figs. June 1970. *WR 142: 39*
[Univ. Guelph, Guelph, Ontario, Canada.] Mink were inoculated under ether anesthesia by placing third-stage larvae directly in the stomach via a stomach tube. The migration route of successive larval stages is traced to the lung parenchyma. Adult female worms in the bronchial epithelium deposit first-stage larvae approximately 40 days after infection.--From abstr.

Tumanov, I. L., V. G. Levin, and E. S. Lysov. [POSTEMBRYONIC DEVELOPMENT OF THE ERMINE *(MUSTELA ERMINEA).*] *Zool. Zh.* 49(5): 799-801. 1970. [From Biol. Abstr. 52(1), 1971. In Russian with English summ.] *WR 142: 40*
[Leningrad Agr. Inst., Leningrad, USSR.]

Van Soest, R. W. M., and P. J. H. Van Bree. ON THE MOULT IN THE STOAT *MUSTELA ERMINEA* LINNAEUS, 1758, FROM THE NETHERLANDS. *Bijdr. Dierk.* 39: 63-68, illus. 1969. [From Biol. Abstr. 52(5), 1971.] *WR 142: 40*
[Univ. Amsterdam, Amsterdam, Netherlands.]

Van Soest, R. W. M., and P. J. H. Van Bree. SEX AND AGE COMPOSITION OF A STOAT POPULATION *(MUSTELA ERMINEA* LINNAEUS, 1758*)* FROM A COASTAL DUNE REGION OF THE NETHERLANDS. *Beaufortia* 17(226): 51-77, illus. 1970. [From Biol. Abstr. 52(3), 1971.] *WR 142: 40*
[Univ. Amsterdam, Amsterdam, Netherlands.]

Yazan, Yu. P. [PINE MARTEN, SABLE AND KIDAS IN THE NORTHERN URALS FORELAND (WINTER OBSERVATIONS).] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(3): 16-28, illus. 1970. [From Biol. Abstr. 52(4), 1971. In Russian with English summ.] *WR 142: 40*

DOGS, WOLVES, FOXES

Baer, G. M., M. K. Abelseth, and J. G. Debbie. ORAL VACCINATION OF FOXES AGAINST RABIES. *Amer. J. Epidemiol.* 93(6): 487-490. June 1971. *WR 142: 40*
[P.O. Box 363, Lawrenceville, Ga.] Abstract: Foxes were vaccinated against rabies by dropping 1 cc of a high-titered attenuated rabies virus on the tongue and buccal mucosa. The animals developed serum-neutralizing antibodies and resisted challenge.

Englund, Jan. SKADOR PÅ SAXFÅNGADE RAEVAR. [INJURIES TO TRAPPED FOXES *(VULPES VULPES).*] *Fauna Flora* 64(3): 117-121, illus. 1969. [From Biol. Abstr. 52(7), 1971. In Swedish.] *WR 142: 40*
[Naturhist. Riksmus., Stockholm, Sweden.]

Henriksson, Kurt. KETTUJEN TARTTUVA SYYHYTAUTI SUOMESSA. [SARCOPTIC MANGE IN WILD RED FOX IN FINLAND.] *Suomen Riista* 23: 127-135, 3 figs. 1971. In Finnish with English summ. *WR 142: 40*
"Sarcoptes scabiei vulpis in *Vulpes vulpes."*

Kaikusalo, Asko. NAALIN PESIMISESTÄ LUOTEIS-ENONTEKIÖSSÄ. [ON THE BREEDING OF THE ARCTIC FOX *(ALOPEX LAGOPUS)* IN NW ENONTEKIÖ, FINNISH LAPLAND.] *Suomen Riista* 23: 7-16, 5 figs. 1971. In Finnish with English summ. *WR 142: 40*
Based on studies of 6 denning sites during the period 1959-1969.

Knable, Anthony E. FOOD HABITS OF THE RED FOX *(VULPES FULVA)* IN UNION COUNTY, ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(4): 359-365. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 40*
[Southern Ill. Univ., Carbondale.]

Kolenosky, George B. HYBRIDIZATION BETWEEN WOLF AND COYOTE. *J. Mammal.* 52 (2): 446-449, 1 fig. May 1971. *WR 142: 40*
[Southern Res. Sta., Maple, Ontario, Canada.] *"Canis latrans* and *C. lupus."*

Kruckenberg, Larry. THE RED FOX: BOUNTY SYSTEM--10 YEARS LATER. *N. Dak. Outdoors* 34(1): 9-11, illus. July 1971. *WR 142: 40*
Analysis of the bounty system in N. Dak. "In years gone by, many methods have been used to harvest the red fox, but no method aroused more controversy than the bounty system. It was expensive, fraudulent, and had little, if any effect on the fox population."

Kuyt, Ernie. FEEDING ECOLOGY OF WOLVES ON BARREN GROUND CARIBOU RANGE IN THE NORTHWEST TERRITORIES. *M.A. thesis, Univ. Saskatchewan.* 116 p. 1970. *WR 142: 41*
[Canadian Wildl. Serv., Fort Smith, Northwest Territories, Canada.] Summer and winter diets, movements, and methods of killing prey were studied. Growth weights and food requirements were observed in captive wolves.

Lahtinen, Jukka. KETUN RAUTAPYYNTI. [FOX-TRAPPING IN CENTRAL FINLAND.] *Suomen Riista* 23: 96-104, 1 fig. 1971. In Finnish with English summ. *WR 142: 41*

Liu, Irwin K. M., Calvin W. Schwabe, Peter M. Schantz, and Malcolm N. Allison. THE OCCURRENCE OF *ECHINOCOCCUS GRANULOSUS* IN COYOTES *(CANIS LATRANS)* IN THE CENTRAL VALLEY OF CALIFORNIA. *J. Parasitol.* 56(6): 1135-1137. Dec. 1970. *WR 142: 41*
[Univ. Calif., Davis.] Abstract: As part of epidemiological studies on hydatid disease in the Central Valley of California, a survey was made in 7 counties for possible infections with *Echinococcus granulosus* in the coyote, *Canis latrans.* Of 173 animals examined, 7 (4%) were found infected, 6 of them from Tehama County.

Loshkarev, G. A. [FEEDING OF THE CAUCASIAN FOX *(VULPES VULPES CAUCASICA* DIN.) IN FOOTHILLS OF THE NORTH CAUCASUS.] *Zool. Zh.* 49(6): 903-906. 1970. [From Biol. Abstr. 52(1), 1971. In Russian with English summ.] *WR 142: 41*
[Tambov Pedagog. Inst., Tambov, USSR.]

Mengel, Robert M. A STUDY OF DOG-COYOTE HYBRIDS AND IMPLICATIONS CONCERNING HYBRIDIZATION IN *CANIS. J. Mammal.* 52(2): 316-336, 7 figs. May 1971. *WR 142: 41*
[Univ. Kans., Lawrence.]

Nakazono, Toshiyuki. [RESEARCHES OF BURROWS OF *VULPES VULPES JAPONICA* IN KYUSHU, JAPAN: I. EXAMPLES OF THE BURROWS AND THE DISTRIBUTIONS.] *J. Mammal. Soc. Japan* 5(1): 1-7, illus. 1970. [From Biol. Abstr. 52(11), 1971. In Japanese with English summ.] *WR 142: 41*
[Yabe Upper Secondary Sch., Kamimashiku, Kumamoto, Japan.]

Nakazono, Toshiyuki. [NOTES ON THE BURROWS OF *VULPES VULPES JAPONICA* IN KYUSHU, JAPAN. II. FOUR EXAMPLES OF BURROW CONSTRUCTION.] *J. Mammal. Soc. Japan* 5(2): 45-49, illus. 1970. [From Biol. Abstr. 52(11), 1971. In Japanese with English summ.] *WR 142: 41*
[Yabe Upper Secondary Sch., Kamimashiku, Kumamoto, Japan.]

Norman, F. I. PREDATION BY THE FOX *(VULPES VULPES* L.) ON COLONIES OF THE SHORT-TAILED SHEARWATER *(PUFFINUS TENUIROSTRIS* (TEMMINCK)) IN VICTORIA, AUSTRALIA. *J. Appl. Ecol.* 8(1): 21-32, 3 figs. Apr. 1971. *WR 142: 41*
[Arthur Rylah Inst. Environ. Res., Heidelberg, Victoria, Australia.] The fox, *Vulpes vulpes*, introduced into Australia in the 1860s, has been reported as causing predation in colonies of the short-tailed shearwater, *Puffinus tenuirostris*, in Victoria, Australia. The effect of fox predation was studied at two such colonies, Cape Woolamai and Benison Island, in Corner Inlet, where predation has been recorded for some time. Comparison of recovery rates of ringed birds, obtained in this study, with data from other Victorian ringing sites showed the relative unimportance of predation at all but Benison Island, where no other vertebrate prey was present.--From summ.

Perry, Matthew C., and Robert H. Giles, Jr. FREE RUNNING DOGS. *Va. Wildl.* 32(5): 17-19, [3 figs.]. May 1971. *WR 142: 41*
[Va. Coop. Wildl. Res. Unit, Blacksburg.] Little evidence was found during the study to indicate that dogs are a problem of great magnitude on a statewide basis.

Pichugin, Y. V. [METHOD OF PREDICTING THE TIME OF MATURATION OF THE FUR OF THE WHITE FOX.] *Sb. Nauch.-Tekh. Inform. Vses. Nauch.-Issled. Inst. Okhotnich'ego Khoz. Zverovod.* 27. p. 35-43. 1969. [From Biol. Abstr. 52(12), 1971, from Referat. Zh., Biol., 1970, no. 71750. Transl. of Russian abstr.] *WR 142: 42*

Pienaar, U. de V. A NOTE ON THE OCCURRENCE OF BAT-EARED FOX *OTOCYON MEGALOTIS MEGALOTIS* (DESMAREST) IN THE KRUGER NATIONAL PARK. *Koedoe* no. 13. p. 23-27, 1 fig. 1970. *WR 142: 42*
[Kruger Nat. Park, Skukuza, South Africa.]

Schnurrenberger, Paul R., Russell J. Martin, and George W. Lantis. RABIES IN ILLINOIS FOXES. *J. Amer. Vet. Med. Ass.* 157(10): 1331-1335, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 42*
[Ill. Dep. Public Health, Springfield.]

Silveira, Estanislau Kostka Pinto da. O LÔBO-GUARÁ *(CHRYSOCYON BRACHYURUS)*--POSSÍVEL ACÃO INIBIDORA DE CERTAS SOLANÁCEAS SÔBRE O NEMATOIDE RENAL. [THE MANED WOLF *(CHRYSOCYON BRACHYURUS)*--POSSIBLE INHIBITORY ACTION OF CERTAIN SOLANACEAE AGAINST THE KIDNEY NEMATODE *(DIOCTOPHYMA RENALE).*] *Vellozia* 7: 58-61, 1 fig. 1969. In Portuguese with English summ. *WR 142: 42*
[Centro Conservacão Natureza, Caixa Postal 3545, ZC-00, Rio de Janeiro, Brazil.]

Stone, Ward B. OCCURRENCE OF BOTFLY LARVAE IN RED FOX. *N.Y. Fish & Game J.* 17(1): 64. Jan. 1970. *WR 142: 42*
"Cuterebra on *Vulpes fulva."*

Thornton, W. A., Gordon C. Creel, and R. E. Trimble. HYBRIDIZATION IN THE FOX GENUS *VULPES* IN WEST TEXAS. *Southwestern Natur.* 15(4): 473-484, 3 figs. 25 May 1971. *WR 142: 42*
[Angelo State Univ., San Angelo, Tex.] Abstract: Probable interspecific hybridization is described between the red fox, *Vulpes fulva*, and the desert kit fox, *Vulpes macrotis*. The range of overlap of *V. fulva* and *V. macrotis* includes Reagan, Crockett, and Glasscock Counties, Texas. Descriptions of probable first generation hybrids are given based on body size, pelage coloration, and cranial characteristics. Data indicate that probable hybridization is limited in extent with no evidence of introgressive hybridization in the zone of overlap in western Texas. Two possible isolating mechanisms are considered: time of denning and ecological preference. Available evidence indicates an overlap in times of denning for *V. macrotis* and *V. fulva*. There appears to be no preference for choice of den sites. The taxon *V. macrotis* may be reaching eastern limits of ecological tolerance in Reagan and Glasscock Counties.

CATS

Barash, David P. COOPERATIVE HUNTING IN THE LYNX. *J. Mammal.* 52(2): 480. May 1971. *WR 142: 42*
[State Univ. Coll., Oneonta, N.Y.] Three *Lynx canadensis* exhibited cooperative hunting behavior.

Daniel, D. C. THE TIGER IN INDIA: AN ENQUIRY. *J. Bombay Natur. Hist. Soc.* 67(2): 227-234. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 42*
[Bombay Natur. Hist. Soc., Bombay, Maharashtra, India.]

Eaton, Randall L. THE PREDATORY SEQUENCE, WITH EMPHASIS ON KILLING BEHAVIOR AND ITS ONTOGENY, IN THE CHEETAH *(ACINONYX JUBATUS* SCHREBER). *Z. Tierpsychol.* 27(4): 492-504, illus. 1970. [From Biol. Abstr. 52(10), 1971. In English with German summ.] *WR 142: 42*
[Univ. Ga., Athens.]

Gardner, Alfred L. NOTES ON THE LITTLE SPOTTED CAT, *FELIS TIGRINA ONCILLA* THOMAS, IN COSTA RICA. *J. Mammal.* 52(2): 464-465. May 1971. *WR 142: 43*
[Univ. Tex., Houston.] Color pattern, measurements, stomach contents and miscellaneous notes on the little spotted cat.

Krahwinkel, D. J., Jr. THE USE OF TILETAMINE HYDROCHLORIDE AS AN INCAPACITATING AGENT FOR A LION. *J. Amer. Vet. Med. Ass.* 157(5): 622-623. 1970. [From Biol. Abstr. 52(8), 1971.] *WR 142: 43*
[Mich. State Univ., East Lansing.]

Mazák, Vratislav. COMMENTS ON THE DISTRIBUTION OF THE LYNX, *LYNX LYNX LYNX* (LINNAEUS, 1785) IN SCANDINAVIA. *Vestn. Cesk. Spolecnosti Zool.* 34(3): 227-233. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 43*
[Charles Univ., Prague, Czechoslovakia.]

Spalding, D. J., and J. Lesowski. WINTER FOOD OF THE COUGAR IN SOUTH-CENTRAL BRITISH COLUMBIA. *J. Wildl. Mgmt.* 35(2): 378-381, 1 fig. Apr. 1971. *WR 142: 43*
[British Columbia Fish & Wildl. Branch, Penticton, Canada.] Abstract: One hundred thirty-two cougar *(Felis concolor)* stomachs, and 73 cougar-killed mule deer *(Odocoileus h. hemionus)* were examined from 1958 to 1967 in south-central British Columbia. Deer was the predominant food item, but when other prey was abundant locally, cougars took advantage of these alternate food sources--snowshoe hares *(Lepus americanus)*, moose *(Alces americana)*, and domestic stock. Cougars seem to take antlered mule deer, as well as the old of both sexes, in greater numbers than exist in the deer population.

BIG GAME, GENERAL

Almasan, H. A., and W. Schroeder. EIN VERSUCH DER ALTERSBESTIMMUNG BEIM GAMSWILD *(R. RUPICAPRA* L.) NACH DER STRUKTUR DER ZAEHNE UND DES UNTERKIEFERS. [AN ATTEMPT AT AGE DETERMINATION IN THE WILD MOUNTAIN GOAT *(RUPICAPRA RUPICAPRA* L.) FROM THE STRUCTURE OF THE TEETH AND MANDIBLE.] *Z. Jagdwiss.* 16(2): 89-90. 1970. [From Biol. Abstr. 52(3), 1971. In German.] *WR 142: 43*

Anderson, Roy C. THE ECOLOGICAL RELATIONSHIPS OF MENINGEAL WORM *(PNEUMOSTRONGYLUS TENUIS* DOUGHERTY, 1945) AND NATIVE CERVIDS IN NORTH AMERICA. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 2): 6-7. Aug. 1970. Abstract only. *WR 142: 43*
[Univ. Guelph, Guelph, Ontario, Canada.]

Andersson, Esko. HAVAINTOJA HIRVEN TALVISESTA RAVINNONKÄYTÖSTÄ JA VUORO-KAUSIRYTMISTÄ. [OBSERVATIONS ON THE WINTER FOOD AND DIURNAL RHYTHM OF THE MOOSE *(ALCES ALCES).*] *Suomen Riista* 23: 105-118, 4 figs. 1971. In Finnish with English summ. *WR 142: 43*

Batty, A. F., and D. I. Chapman. GASTRO-INTESTINAL PARASITES OF WILD FALLOW DEER *(DAMA DAMA* L.). *J. Helminthol.* 44(1): 57-61. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 43*
[9, St. Albans Rd., Essex, England.]

Bergerud, Arthur T. ABUNDANCE OF FORAGE ON THE WINTER RANGE OF NEWFOUNDLAND CARIBOU. *Canadian Field-Natur.* 85(1): 39-52, 10 figs. Jan.-Mar. 1971. *WR 142: 43*
[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: The abundance of forage for caribou *(Rangifer tarandus)*, mainly evergreen shrubs and terrestrial lichens, was measured at 22 locations in Newfoundland. Study areas were selected to represent plant successional stages following fires on former forest sites and in lichen woodlands and also on subalpine winter range used by caribou. The supplies of forage were substantial and there appeared to

be no absolute shortage of food for caribou. It was concluded that forest fires in the past have increased the extent of winter range by altering closed-canopy forests to lichen woodlands or shrub-barrens, and prostrate subalpine spruce-fir thickets to lichen-shrub barrens.

Bergerud, Arthur T., and Michael J. Nolan. FOOD HABITS OF HAND-REARED CARIBOU *RANGIFER TARANDUS* L. IN NEWFOUNDLAND. *Oikos* 21(2): 348-350, illus. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 44*
[Univ. Victoria, Victoria, British Columbia, Canada.]

Blood, Donald A. CONTAGIOUS ECTHYMA IN ROCKY MOUNTAIN BIGHORN SHEEP. *J. Wildl. Mgmt.* 35(2): 270-275, 4 figs. Apr. 1971. *WR 142: 44*
[Saskatchewan Dept. Natur. Resour., Saskatoon, Canada.] Abstract: Contagious ecthyma (sore mouth), a disease usually associated with domestic sheep, was noted in wild bighorn sheep *(Ovis canadensis)* in western Alberta and eastern British Columbia. The disease in bighorns, as in domestic sheep, is characterized by lesions of the lips, muzzle, and occasionally the eyes and coronary band of the feet. Most infections were in lambs, but mild cases were observed in adult ewes and rams. Regular use of salt blocks by bighorns appears to be important in maintaining the disease. Most infected bighorns were observed in summer, although cases have been noted in fall and winter. The disease appears to be contagious in bighorns, but it runs a benign course and is followed by spontaneous healing.

Caughley, G. POPULATION STATISTICS OF CHAMOIS. *Mammalia* 34(2): 194-199. 1970. [From Biol. Abstr. 52(5), 1971. In English with French summ.] *WR 142: 44*
[Univ. Sydney, Sydney, Australia.]

Caughley, Graeme. FAT RESERVES OF HIMALAYAN THAR IN NEW ZEALAND BY SEASON, SEX, AREA AND AGE. *New Zealand J. Sci.* 13(2): 209-219, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 44*
[Univ. Sydney, Sydney, Australia.]

Caughley, Graeme. LIBERATION, DISPERSAL AND DISTRIBUTION OF HIMALAYAN THAR *(HEMITRAGUS JEMLAHICUS)* IN NEW ZEALAND. *New Zealand J. Sci.* 13(2): 220-239, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 44*
[Univ. Sydney, Sydney, Australia.]

Douglas, M. J. W. DENTAL CEMENT LAYERS AS CRITERIA OF AGE FOR DEER IN NEW ZEALAND WITH EMPHASIS ON RED DEER, *CERVUS ELAPHUS*. *New Zealand J. Sci.* 13(3): 352-358, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 44*
[Forest Res. Inst., Canterbury, New Zealand.]

Druri, S. M. [SOME ADAPTIVE FEATURES OF REINDEER UNDER POLAR CONDITIONS.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(4): 28-31. 1970. [From Biol. Abstr. 52(6), 1971. In Russian with English summ.] *WR 142: 44*

Dudzinski, Wieslaw. STUDIES ON *CEPHENEMYIA STIMULATOR* (CLARK) (DIPTERA, OESTRIDAE), THE PARASITE OF THE EUROPEAN ROE DEER, *CAPREOLUS CAPREOLUS* (L.): I. BIOLOGY. *Acta Parasitol. Pol.* 18(42-50): 555-572, illus. 1970. [From Biol. Abstr. 52(12), 1971. In English with Polish summ.] *WR 142: 44*
[Warsaw Agr. Univ., Warsaw, Poland.]

Dudzinski, Wieslaw. STUDIES ON *CEPHENEMYIA STIMULATOR* (CLARK) (DIPTERA, OESTRIDAE), THE PARASITE OF EUROPEAN ROE DEER, *CAPREOLUS CAPREOLUS* (L.): II. INVASIOLOGY. *Acta Parasitol. Pol.* 18(42-50): 573-592, illus. 1970. [From Biol. Abstr. 52(12), 1971. In English with Polish summ.] *WR 142: 44*
[Warsaw Agr. Univ., Warsaw, Poland.]

Dulitskii, A. I., and A. A. Kormilitsyn. [*OVIS MUSIMON* PALLAS, 1811 IN THE CRIMEA.] *Vestn. Zool.* 4(4): 25-29, illus. 1970. [From Biol. Abstr. 52(5), 1971. In Russian with English summ.] *WR 142: 44*

Ellis, James Edgar. A COMPUTER ANALYSIS OF FAWN SURVIVAL IN THE PRONGHORN ANTELOPE. *Ph.D. thesis, Univ. Calif.* (Davis). 79 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 45*

Eriksen, Erik. INDFANGNING AF HJORTEVILDT VED IMMOBILISERING MED NEUROLEPTIKA. [CAPTURE OF CERVIDAE BY IMMOBILIZATION WITH NEUROLEPTICS.] *Nord. Vet. Med.* 22(7/8): 385-400, illus. 1970. [From Biol. Abstr. 52(10), 1971. In Danish with German and English summ.] *WR 142: 45*

[Klg. Vet. og Landbohojsk., Copenhagen, Denmark.] A total of 20 red deer *(Cervus elaphus)*, 59 fallow deer *(Dama dama)* and 12 sika deer *(Cervus nippon)* were captured by immobilization with drugs and combination drugs consisting of M-99, Flegicil, Sernylane, Azaperone and Rompun.

Franzmann, Albert W. PHYSIOLOGIC VALUES OF STONE SHEEP. *J. Wildl. Dis.* 7(3): 139-141. July 1971. *WR 142: 45*

[Univ. Idaho, Moscow.] Abstract: Physiologic values obtained from 10 stone sheep *(Ovis dalli stonei)* were reported, providing a start in establishing base line values for the species. The influence of excitability, diet, and stress of the sheep at sampling upon certain values was recognized.

Franzmann, Albert W., and Daryl M. Hebert. VARIATION OF RECTAL TEMPERATURE IN BIGHORN SHEEP. *J. Wildl. Mgmt.* 35(3): 488-494, 4 figs. July 1971. *WR 142: 45*

[Univ. Idaho, Moscow.] Abstract: Rectal temperatures obtained from 127 bighorn sheep *(Ovis canadensis)* under varying conditions of excitement, ambient temperature, and diet indicate the possible influence of these factors upon the body temperature of bighorn sheep. By minimizing the effects of these variables, a normal rectal temperature range from 38.3 C (101.0 F) to 38.9 C (102.1 F) was established. Rectal temperatures declined under conditions of lowered ambient temperature, and a seasonal cycling of rectal temperatures was noted. The rise in body temperature, with increased excitability, was the most dominant influence on rectal temperature. The effect of diet on rectal temperature was difficult to determine, and no definite conclusions were made. Behavioral patterns of bighorn sheep on winter range, relative to conservation of energy, were discussed with reference to the demonstrated increase in body temperature with increased excitement.

Franzmann, Albert W., and E. Tom Thorne. PHYSIOLOGIC VALUES IN WILD BIGHORN SHEEP *(OVIS CANADENSIS CANADENSIS)* AT CAPTURE, AFTER HANDLING, AND AFTER CAPTIVITY. *J. Amer. Vet. Med. Ass.* 157(5): 647-650. 1970. [From Biol. Abstr. 52 (8), 1971.] *WR 142: 45*

[Univ. Idaho, Moscow.]

Gilbert, Barrie Keith. THE INFLUENCE OF FOSTER REARING ON ADULT SOCIAL BEHAVIOR IN FALLOW DEER *(DAMA DAMA)*. *Ph.D. thesis, Duke Univ.* 107 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 45*

Grimm, Reinmar. BLAUBOECKCHEN *(CEPHALOPHUS MONTICOLA* (THUNBERG, 1798); CEPHALOPHINAE, BOVIDAE) ALS INSEKTENFRESSER. [BLUE DUIKERS *(CEPHALOPHUS MONTICOLA* (THUNBERG, 1798); CEPHALOPHINAE, BOVIDAE) AS INSECTIVORES.] *Z. Säugetierk.* 35(6): 357-359. 1970. [From Biol. Abstr. 52(12), 1971. In German with English summ.] *WR 142: 45*

[Univ. Hamburg, Hamburg, Germany.]

Heinichen, Irmgard Gudrun. KARYOLOGICAL STUDIES ON SOUTHERN AFRICAN PERISSODACTYLA. *Koedoe* no. 13. p. 51-108, [16 figs.]. 1970. *WR 142: 45*

[Univ. Zululand, Natal, South Africa.] The karyotypes of the different species of the Perissodactyla were compared with each other. There is a great variation in number and morphology of the karyotypes, so that no morphological relationship between the autosomes was found, although a similarity was recognized in the sex chromosomes throughout the order. The sex chromosomes of the

rhinoceroses resemble those of the horse. The subspecies of *Equus burchelli*, namely *E. b. burchelli*, *E. b. antiquorum* and *E. b. chanchait* (=*selousi*) and intermediate types between the latter two all have the same chromosome number, namely 2n = 44, and morphologically apparently identical karyograms. The same applies to the subspecies of *Equus zebra*, *E. z. zebra* and *E. z. hartmannae*, with a diploid chromosome number of 32.--From summ.

Hudson, R., W. D. Kitts, and P. J. Bandy. IMMUNOGLOBULIN RESPONSE OF THE ROCKY MOUNTAIN BIGHORN SHEEP. *J. Wildl. Dis.* 7(3): 171-174. July 1971. *WR 142: 46*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Hutchison, Maureen. OBSERVATIONS ON THE GROWTH RATE AND DEVELOPMENT OF SOME EAST AFRICAN ANTELOPES. *J. Zool.* (London) 161(4): 431-436, illus. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 46*
[Univ. Glasgow, Glasgow, Scotland.]

Hutchison, Maureen. ARTIFICIAL REARING OF SOME EAST AFRICAN ANTELOPES. *J. Zool.* (London) 161(4): 437-442. 1970. [From Biol. Abstr. 52(3), 1971.] *WR 142: 46*
[Univ. Glasgow, Glasgow, Scotland.]

Jungius, Hartmut. STUDIES ON THE BREEDING BIOLOGY OF THE REEDBUCK *(REDUNCA ARUNDINUM* BODDAERT, 1785*)* IN THE KRUEGER NATIONAL PARK. *Z. Säugetierk.* 35(3): 129-146, illus. 1970. [From Biol. Abstr. 52(5), 1971. In English with German summ.] *WR 142: 46*
[Christian-Albrechts Univ., Kiel, Germany.]

Keep, M. E. ETORPHINE HYDROCHLORIDE ANTAGONISTS USED IN THE CAPTURE OF THE WHITE RHINOCEROS *CERATOTHERIUM SIMUM SIMUM*. *Lammergeyer* 3(13): 60-68. Feb. 1971. *WR 142: 46*
[Natal Parks, Game & Fish Preservation Board, Pietermaritzburg, South Africa.]
Summary: Nalorphine hydrobromide, Cyprenorphine hydrochloride, or Diprenorphine hydrochloride were employed to antagonise the narcotic Etorphine hydrochloride used in drug combinations for the immobilization of 320 white rhinos between April 1967 and April 1970. The method of capture and the dosages of each drug used are given, and the relative efficiency of each antagonist in enabling the animal to rise after administration is discussed.

Keep, M. E. OBSERVABLE CRITERIA FOR ASSESSING THE PHYSICAL CONDITION OF THE WHITE RHINOCEROS *CERATOTHERIUM SIMUM* IN THE FIELD. *Lammergeyer* 3(13): 25-28, 5 figs. Feb. 1971. *WR 142: 46*
[Natal Parks, Game & Fish Preservation Board, Pietermaritzburg, South Africa.]
"Objective criteria for assessing the physical condition of the white rhinoceros are defined."

Keep, M. E. SOME PARASITES AND PATHOLOGY OF THE NYALA *TRAGELAPHUS ANGASI* AND ITS POTENTIAL VALUE AS A RANCH ANIMAL. *Lammergeyer* 3(13): 45-54. Feb. 1971. *WR 142: 46*
[Natal Parks, Game & Fish Preservation Board, Pietermaritzburg, South Africa.]
Mean live weights of adult male and female nyala in Zululand are given. Mean dressing out percentages and weight of edible lean meat available from these animals was established, as well as the weight of the internal organs. From this the potential quantity of biltong which could be prepared was calculated. External and internal parasites, including blood parasites, are listed, and their significance discussed.--From summ.

Kormylytsyn, A. A. [THE ECOLOGY OF *CERVUS ELAPHUS BRAUNERI* CHARLEMAGNE 1920.] *Vestn. Zool.* 4(5): 15-19. 1970. [From Biol. Abstr. 52(11), 1971. In Russian with English summ.] *WR 142: 46*

Kuznetsov, G. V., and G. A. Dmitriev. [BIOLOGICAL CHARACTERISTIC OF ROARING IN DEER.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(4): 22-27, illus. 1970. [From Biol. Abstr. 52(11), 1971. In Russian with English summ.] *WR 142: 47*

Ladziansky, Alexander. PRISPEVOK K OTAZKE VYZIVY RATICOVEJ ZVERI. [CONTRIBUTION TO THE PROBLEM OF NOURISHMENT OF CLOVED-FOOTED GAME.] *Ved. Pr. Vysk. Ustavu Les. Hospod. Zvolene* 10. p. 247-276, illus. 1968. [From Biol. Abstr. 52(10), 1971. In Czech with Russian, German and English summ.] *WR 142: 47*
[Vysk. Ustavu Les. Hospod., Zvolene, Czechoslovakia.]

Lampio, Teppo. MILLOIN HIRVET KAATUIVAT 1968. [KILLING DATES OF MOOSE IN FINLAND IN 1968.] *Suomen Riista* 23: 39-50, 11 figs. 1971. In Finnish with English summ. *WR 142: 47*
"Alces alces."

Leuthold, Walter. OBSERVATIONS ON THE SOCIAL ORGANIZATION OF IMPALA *(AEPYCEROS MELAMPUS)*. *Z. Tierpsychol.* 27(6): 693-721, illus. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 47*
[Smithsonian Inst., Washington, D.C.]

Low, William Alec. THE INFLUENCE OF ARIDITY ON REPRODUCTION OF THE COLLARED PECCARY *(DICOTYLES TAJACU* (LINN.)) IN TEXAS. *Ph.D. thesis, Univ. British Columbia.* 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa.] *WR 142: 47*
Predation and parasitism are probably of minor importance to the populations. Combined cold weather and drought resulted in a decrease of 29% of two herds, and could function as a factor controlling populations. Drought, through its effect on food availability, appears to be the primary controlling factor of peccary populations in Texas.

McEwan, E. H. TWINNING IN CARIBOU. *J. Mammal.* 52(2): 479. May 1971. *WR 142: 47*
[Univ. British Columbia, Vancouver, Canada.] *"Rangifer tarandus."*

Meleney, W. P., and I. H. Roberts. *OTOBIUS MEGNINI* (ACARINA: ARGASIDAE) IN THE EARS OF PRONGHORN ANTELOPE *(ANTILOCAPRA AMERICANA)* IN NEW MEXICO. *J. Parasitol.* 56(5): 917. Oct. 1970. *WR 142: 47*
[Agr. Res. Serv., P.O. Box 705, Albuquerque, N. Mex.] *"O. megnini* is a more common parasite of the pronghorn antelope than was previously indicated in the literature. It is anticipated that when large groups of antelope from other sections of its range are carefully examined, ear ticks will undoubtedly be found."

Mikyuriya, Masaharu, and Iwao Obara. [STOMACH CONTENTS OF A JAPANESE SEROW *CAPRICORNIS CRISPUS* FROM NIKKO, CENTRAL JAPAN.] *J. Mammal. Soc. Japan* 5(2): 80-81. 1970. [From Biol. Abstr. 52(11), 1971. In Japanese with English summ.] *WR 142: 47*
[Nat. Breeding Cent. Japanese Weasel, Tokyo, Japan.]

Mitchell, George J., and Sylvester Smoliak. PRONGHORN ANTELOPE RANGE CHARACTERISTICS AND FOOD HABITS IN ALBERTA. *J. Wildl. Mgmt.* 35(2): 238-250, 1 fig. Apr. 1971. *WR 142: 47*
[Univ. Saskatchewan, Regina, Canada.] Abstract: Range productivity, vegetation characteristics, and food habits of the pronghorn antelope *(Antilocapra americana)* were studied in the Pakowki and Newell areas, Alberta, from 1962 through 1965. Quantitative measurements of canopies, frequencies, constancies of taxa, and yields of plant categories showed that the Pakowki and Newell areas represented spear grass-western wheat grass/blue grama *(Stipa comata-Agropyron smithii/Bouteloua gracilis)*, and spear grass/blue grama habitat types, respectively. Food habits were studied by analysis of 162 samples of rumen contents collected at monthly intervals in each month except December. The yearlong

diet in the Newell area consisted of 51% forbs, 35% browse species, and 13% grasses and sedges. Antelopes in both areas had eaten 52 forbs, 12 browse species, an undetermined number of grasses and sedges, and a trace of lichens. The important food categories in the Newell area were browse species in summer, fall, and winter; forbs in all seasons; and grasses and sedges in spring. Cultivated grain was of minor importance. In the Pakowki area, browse species and grasses and sedges were the most important food categories in late fall and early winter. The five major food items, comprising 73% of the total diet in the Newell area, were silver sagebrush *(Artemisia cana)*, pasture sagewort *(A. frigida)*, grasses and sedges, ball cactus *(Mamillaria vivipara)*, and western snowberry *(Symphoricarpos occidentalis)*, in order of decreasing volume. These same species comprised 90% of the diet of antelopes in the Pakowki area in late fall and early winter. Comparisons between vegetation abundance and antelope food habits in two areas in 1964 indicated that both forbs and browse species are preferred foods, and that forbs, when available, are eaten in preference to grasses and sedges. Silver sagebrush and pasture sagewort are key antelope foods in the Newell area, comprising 82% of the winter diet, and over one-half the diet at all times except summer. Silver sagebrush, western snowberry, and graminaceous species are the key foods in the Pakowki area in fall and early winter. The role and importance of big sagebrush *(Artemisia tridentata)* in the diet of antelopes south of latitude 49°N is assumed by silver sagebrush and pasture sagewort in the diet of antelopes in Alberta.

Mugera, G. M. LESIONS CAUSED BY *COOPERIOIDES HEPATICA* AND *STILESIA HEPATICA* IN THE LIVER OF KENYA IMPALA. *Bull. Epizoot. Dis. Afr.* 17(3): 311-316, illus. 1969. [From Biol. Abstr. 52(9), 1971.] *WR 142: 48*
[Univ. Coll., Nairobi, Kenya.]

Muller, Hans Peter. DIE WASSERBUEFFEL TUNESIENS. [THE WATER BUFFALO *(BUBALUS BUBALIS)* OF TUNISIA.] *Saugetierk. Mitt.* 18(3): 215-224, illus. 1970. [From Biol. Abstr. 52(9), 1971. In German with French and English summ.] *WR 142: 48*

Muller-Schwarze, Dietland, and Christine Muller-Schwarze. LIP-SMACKING IN THE PRONGHORN *(ANTILOCAPRA AMERICANA)*. *Z. Saugetierk.* 35(6): 353-356, illus. 1970. [From Biol. Abstr. 52(12), 1971. In English with German summ.] *WR 142: 48*
[Utah State Univ., Logan.]

Netke, S. P., B. G. Katpatal, and R. K. Gambheer. SEASONAL REPRODUCTION IN THE INDIAN BUFFALOES. *Z. Tierzuecht. Zuechtungsbiol.* 87(1): 62-68. 1970. [From Biol. Abstr., 52(8), 1971. In English with German summ.] *WR 142: 48*
[Coll. Vet. Sci. & Anim. Husbandry, Jabalpur, Madhya Pradesh, India.]

Norderhaug, Magnar. INVESTIGATION OF THE SVALBARD REINDEER *(RANGIFER TARANDUS PLATYRHYNCHUS)* IN BARENTSOYA AND EDGEOYA, SUMMER 1969. *Norsk Polarinst. Arbok 1969*. p. 55-69, illus. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 48*

Oldemeyer, John L., William J. Barmore, and Douglas L. Gilbert. WINTER ECOLOGY OF BIGHORN SHEEP IN YELLOWSTONE NATIONAL PARK. *J. Wildl. Mgmt.* 35(2): 257-269, 2 figs. Apr. 1971. *WR 142: 48*
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: Bighorn sheep *(Ovis c. canadensis)* were intensively studied on the northern Yellowstone winter range during the winter of 1965-66, with additional data gathered the following two winters. Censuses showed a stable or slowly increasing population of about 250 animals. Grass and browse utilization was moderately high. During the winter of 1965-66, bighorns ate 61% grass, 17% forbs, and 22% browse. Bluebunch wheatgrass *(Agropyron spicatum)* was the most common species in the diet. Snow cover was light that winter, and competition with elk *(Cervus canadensis)* was slight to moderate.

Oritsland, Nils Are. FETTRESERVER HOS SVALBARDREINEN. [FAT DEPOSITS IN SVALBARD REINDEER.] *Fauna* (Oslo) 23(2): 106-107. 1970. [From Biol. Abstr. 52 (3), 1971. In Norwegian with English summ.] *WR 142: 49*
[Univ. Oslo, Oslo, Norway.]

Pienaar, U. de V. THE RECOLONISATION HISTORY OF THE SQUARE-LIPPED (WHITE) RHINOCEROS *CERATOTHERIUM SIMUM SIMUM* (BURCHELL) IN THE KRUGER NATIONAL PARK (OCTOBER 1961--NOVEMBER 1969). *Koedoe* no. 13. p. 157-169, [8 figs.] + 1 table. 1970. *WR 142: 49*
[Kruger Nat. Park, Skukuza, South Africa.] The relocation of 141 rhinos to Kruger National Park has proved satisfactory; the present population numbers between 155 and 160.

Rakov, N. V. [CAUSES OF MORTALITY OF THE WILD BOAR AND ITS INTERRELATION WITH PREDATORS IN THE AMUR TERRITORY.] *Zool. Zh.* 49(8): 1220-1228. 1970. [From Biol. Abstr. 52(7), 1971. In Russian with English summ.] *WR 142: 49*
[Orenburg Inst. Agr., Orenburg, USSR.]

Roettcher, D., R. R. Hofmann, and F. I. B. Kayanja. ERGEBNISSE DER PRAE- UND POSTNATALEN ALTERSBESTIMMUNG BEIM OSTAFRIKANISCHEN IMPALA *(AEPYCEROS MELAMPUS* LICHTENSTEIN, 1812*)*. [RESULTS OF THE PRE- AND POSTNATAL AGE DETERMINATION IN EAST AFRICAN IMPALA *(AEPYCEROS MELAMPUS* LICHTENSTEIN, 1812*)*.] *Z. Säugetierk.* 35 (5): 289-305, illus. 1970. [From Biol. Abstr. 52(8), 1971. In German with English summ.] *WR 142: 49*
[Dep. Clin. Stud., P.O. Kabete, Kenya.]

Schweinsburg, Raymond E. HOME RANGE, MOVEMENTS, AND HERD INTEGRITY OF THE COLLARED PECCARY. *J. Wildl. Mgmt.* 35(3): 455-460, 2 figs. July 1971.
WR 142: 49
[Johns Hopkins Univ., Baltimore, Md.] Abstract: Fifty-two collared peccaries *(Dicotyles tajacu)* from five wild herds were marked for field identification. Radio transmitters were placed on 15 peccaries and were used to locate the herds. The home ranges were smaller than those previously reported. The home ranges of four of the herds were 0.2, 0.3, 0.5, and 0.6 square mile each. Each home range consisted of a central area used exclusively by one herd and peripheral areas that were shared with other herds. The use of peripheral areas by several herds was more conspicuous when waterholes or other particularly desirable places were present near these boundaries. Individual herds did not travel over their entire areas uniformly but used core areas more consistently than other parts of their ranges. Changes in herd size were caused by animals being driven from the herd after aggression, temporary loss of individuals when the herd was alarmed and scattered, and the addition of new members when wandering individuals joined the herd.

Severinghaus, C. W., and Lawrence W. Jackson. FEASIBILITY OF STOCKING MOOSE IN THE ADIRONDACKS. *N.Y. Fish & Game J.* 17(1): 18-32, 1 fig. Jan. 1970.
WR 142: 49
Abstract: Suggestions that moose might be reestablished in the Adirondack region of New York prompted a review of available information concerning the feasibility of such an undertaking. Moose were native to the Adirondacks, but they disappeared shortly after the mid-1800's. All the basic environmental requirements for sustaining a moose population appear still to be present. However, virtually all habitat suitable for moose is now overstocked with deer. Furthermore, the deer are heavily infested with a nematode, *Pneumostrongylus tenuis*, to which they are largely immune but which causes a generally fatal neurologic disease in moose. The evidence indicates that this moose disease would doom any stocking effort to failure.

Sheffield, William J., Jr., Ernest D. Ables, and Bruce A. Fall. GEOGRAPHIC AND ECOLOGIC DISTRIBUTION OF NILGAI ANTELOPE IN TEXAS. *J. Wildl. Mgmt.* 35(2): 250-257, 2 figs. Apr. 1971. *WR 142: 50*

[Tex. Agr. Exp. Sta., College Station.] Abstract: Nilgai antelope *(Boselaphus tragocamelus)* were released between 1924 and 1949 by King Ranch, Inc., onto their Norias Division in south Texas. From Norias, nilgai have been transplanted to nine counties in Texas and to one ranch in Mexico. Nilgai have expanded naturally throughout a 1,000-square-mile area in Kenedy and Willacy counties. Norias comprises 29% of this range and today has 55% of the 4,000 nilgai in Texas. Helicopter censuses of nilgai indicated 2,333 nilgai on Norias in 1969 and 2,149 in 1970, densities of one per 69 acres and one per 73 acres, respectively. These differences were within the range of expected sampling variability, but female nilgai may have moved off Norias onto adjoining ranches. Adult sex ratios were 0.7 male per female in 1969 and 1.1 males per female in 1970. Age ratios were 0.6 calf per female in 1969 and 0.5 calf per female in 1970. Nilgai consistently preferred improved rangeland, live oak *(Quercus virginiana)* forests, and coastal prairies, in that order. The nilgai population is now well established and expanding its range.

Slaughter, Leo. GESTATION PERIOD OF THE DORCAS GAZELLE. *J. Mammal.* 52(2): 480-481. May 1971. *WR 142: 50*

[Nat. Zoological Park, Washington, D.C.] The gestation period for *Gazella dorcas* ranged from 169 to 174 days for four live births.

Smythe, Nicholas David Edward. ECOLOGY AND BEHAVIOR OF THE AGOUTI *(DASYPROCTA PUNCTATA)* AND RELATED SPECIES ON BARRO COLORADO ISLAND, PANAMA. *Ph.D. thesis, Univ. Md.* 217 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 50*

Tulloch, D. G. SEASONAL MOVEMENTS AND DISTRIBUTION OF THE SEXES IN THE WATER BUFFALO, *BUBALUS BUBALIS*, IN THE NORTHERN TERRITORY. *Australian J. Zool.* 18(4): 399-414, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 50*

[Anim. Ind. & Agr. Br., North Territory Admin., Darwin, Australia.]

Watson, Adam. CLIMATE AND THE ANTLER-SHEDDING AND PERFORMANCE OF RED DEER IN NORTH-EAST SCOTLAND. *J. Appl. Ecol.* 8(1): 53-67, 6 figs. Apr. 1971. *WR 142: 50*

[Nature Conservancy, Blackhall, Banchory, Kincardineshire, Scotland.] Summary: On any one area, the timing of antler-shedding in red deer was earlier *(P<0.001)* after fairly snow-free winters than after snowy winters. On different areas in the same year, stags at high altitudes were later *(P<0.001)* in shedding antlers than stags at low altitudes. However, the rate at which antlers were shed did not vary significantly between snowy and fairly snow-free years, or between high and low altitudes. Stags in good condition were early in shedding old antlers and growing new ones, in moulting their grey-brown winter coats, and in growing their new red summer coats. Of the many stags that were found dead from March to early May, none had shed its antlers, and all were in poor condition. At one place, stags which ate artificial food daily in winter were tamest towards man, were the most dominant individuals, and were the earliest to shed antlers. After cold snowy winters many deer died and the percentage of the previous year's calves was low among groups of hinds and calves counted in May, and the percentage of current year's calves in these groups was low in September (highly significant correlations with the duration of snow-lie in the previous winter). Thus the timing of antler-shedding in early spring is a useful portent of the condition, mortality and breeding performance of the stock subsequently in late spring and summer.

Woolf, Alan, and James H. Swart. ETORPHINE HYDROCHLORIDE: ANESTHETIC FOR SURGERY ON AN ELK *(CERVUS CANADENSIS CANADENSIS)*. *J. Amer. Vet. Med. Ass.* 157 (5): 641-642. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 50*

[Rachelwood Wildl. Res. Preserv., New Florence, Pa.]

Yazan, Yu. P., and V. M. Glushkov. [THE SEASONAL DISPLACEMENT OF THE EUROPEAN ELK *(ALCES ALCES)* ON THE HUNTING FARM OF THE ALL-UNION SCIENTIFIC RESEARCH INSTITUTE OF ANIMAL RAW MATERIAL AND FURS.] *Tr. Kirov. Sel'skokhoz. Inst.* 21(46): 118-125. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I689. In Russian.] *WR 142: 51*

Yazan, Yu. P., and V. M. Glushkov. [THE EFFECT OF LOW AIR TEMPERATURES ON THE FEATURES OF THE DISTRIBUTION AND DIET OF THE ELK.] *Tr. Kirov. Sel'skokhoz. Inst.* 21(46): 125-128. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I690. In Russian.] *WR 142: 51*

DEER (Odocoileus)

Anderson, Allen E., and Dean E. Medin. ANTLER PHENOLOGY IN A COLORADO MULE DEER POPULATION. *Southwestern Natur.* 15(4): 485-494, 3 figs. 25 May 1971. *WR 142: 51*

[Colo. Div. Game, Fish & Parks, Fort Collins.] Abstract: Antler phenology of a migratory Rocky Mountain mule deer *(Odocoileus hemionus hemionus)* population in northcentral Colorado was related to duration of daylight and the reproductive cycle (1959-65) by laboratory examination of 85 males, 50 pregnant females, and 1,750 field observations of antlered males. Antler growth occurred from March 6 to October 22; velvet drying or shedding, August 17-October 27; fully developed antlers, September 18-March 11; and antler shedding, December 17-April 10. Average testicular volume was minimal during April and May with increasing daylight and increased to a peak during October and November under decreasing daylight. Testicular volume regressed from December through March with increasing daylight. Antlers were shed during and following the inferred breeding season (November 15-February 7). Neck circumference averaged about the same from March through September, increased to a peak in October and November, and regressed from December through February. Significant regressions of age vs. testicular volume (October-November) and age vs. neck circumference (yearlong) suggest that the age distribution of the sample may have modified these cyclic variations.

Behrend, Donald F. THE NEMATODE, *PNEUMOSTRONGYLUS TENUIS*, IN WHITE-TAILED DEER IN THE ADIRONDACKS. *N.Y. Fish & Game J.* 17(1): 45-49. Jan. 1970. *WR 142: 51*

[Huntington Wildl. Forest Sta., Newcomb, N.Y.] Of 180 deer heads examined in the 1968 survey, 77% were found to contain *Pneumostrongylus tenuis*.--From abstr.

Bellis, E. D., and H. B. Graves. DEER MORTALITY ON A PENNSYLVANIA INTERSTATE HIGHWAY. *J. Wildl. Mgmt.* 35(2): 232-237, 1 fig. Apr. 1971. *WR 142: 51*

[Pa. State Univ., University Park.] Abstract: During 14 months 286 white-tailed deer *(Odocoileus virginianus)* were killed by vehicles on an 8-mile section of Interstate 80 in central Pennsylvania. Mortality among fawns and yearlings was not significantly different between the sexes, but among adults many more females than males were killed. Mortality was highest in the fall, high in spring, and low in summer and winter. The numbers killed per month were strongly correlated with the numbers seen grazing on the planted right-of-way. Mortality was highest in sections of highway that lay in troughs formed by steep median strips and steep rights-of-way, where troughs ended by a lowering of the median strips, and through flat areas where both sides of the highway and the median strip provided good pasture.

Brunetti, Oscar A., and Merton N. Rosen. PREVALENCE OF *ECHINOCOCCUS GRANULOSUS* HYDATID IN CALIFORNIA DEER. *J. Parasitol.* 56(6): 1138-1140, 1 fig. Dec. 1970. *WR 142: 51*

[Calif. Dep. Fish & Game, Sacramento.] Abstract: During the 25-year period from January 1945 through December 1969 2,049 deer were autopsied. *Echinococcus granulosus* hydatid cysts were found in the lungs of 26 deer for an overall infection rate of 1.3%. However, 2 deer herds in western Glenn and western Tehama counties had 8 infected of 33 and 6 infected of 25 deer, or rates of 24.2 and 24%, respectively.

Capel, Stephen W., Harry D. Anthony, and William C. Peabody. SEROLOGIC SURVEY OF KANSAS DEER. *Trans. Kans. Acad. Sci.* 73(3): 348-360, 3 figs. 1970. *WR 142: 52*

[Kans. Forestry, Fish & Game Comm., McPherson.] Of 1759 samples tested for brucellosis, only one whitetail doe and one mule deer had positive titers (0.1%). Tests of 1624 sera for anaplasmosis indicated that 23 (1.4%) were positive. Tests for 12 serotypes of leptospirosis on 1756 deer sera produced 51 (2.9%) positive titers to one or more serotypes.--From abstr.

Crawford, James C., and D. C. Church. RESPONSE OF BLACK-TAILED DEER TO VARIOUS CHEMICAL TASTE STIMULI. *J. Wildl. Mgmt.* 35(2): 210-215, 5 figs. Apr. 1971. *WR 142: 52*

[Oreg. State Univ., Corvallis.] Abstract: The response to salty, sour, sweet, and bitter compounds by black-tailed deer *(Odocoileus hemionus)* was determined by use of the two-choice preference test method. Test compounds were supplied in water solutions and compared with the consumption of tap water. Chemicals tested were NaCl and Na acetate (salty); HCl, acetic, and butyric acids (sour); saccharin (the non-Na crystalline form), glucose, and sucrose (sweet); and quinine sulfate and quinine monohydrochloride (bitter). Results indicated that deer strongly preferred Na acetate solutions (from 0.04 to 2.5%) but showed no preference for NaCl. Deer exhibited a wide range of fairly strong preference for acetic acid (from 0.0067 to 0.16%), but not for butyric or HCl acids. Deer rejected acetic and butyric acids at a much higher pH (3.25 for acetic and 3.95 for butyric) than for HCl (2.35), which has a less noticeable odor. Deer demonstrated strong preferences for sweet solutions, glucose being preferred over a range from 0.53 to 20%, the highest concentration tested, and sucrose from 0.25 to 10%. They also preferred saccharin over a wide range of concentrations (from 0.000625 to 0.160%), but to a much lesser degree than for sugars. While no sex differences were observed in responses to sweets, salts, and acids, definite sex differences were observed in the response of deer to bitter taste. Bucks demonstrated a marked preference for bitter solutions (from 0.0025 to 0.01% for quinine sulfate and from 0.00125 to 0.005% for quinine monohydrochloride), whereas the does rejected them at the same concentrations.

Fletch, A. L., and L. H. Karstad. STUDIES ON THE PATHOGENESIS OF EXPERIMENTAL EPIZOOTIC HEMORRHAGIC DISEASE OF WHITE-TAILED DEER. *Canadian J. Comp. Med.* 35 (3): 224-229, 6 figs. July 1971. *WR 142: 52*

[Univ. Toronto, Toronto, Ontario, Canada.]

Gist, Clayton S., and F. Ward Whicker. RADIOIODINE UPTAKE AND RETENTION BY THE MULE DEER THYROID. *J. Wildl. Mgmt.* 35(3): 461-468, 4 figs. July 1971. *WR 142: 52*

[Univ. Ga., Athens.] Abstract: Data are presented on uptake and loss rates of ^{131}Iodine by the thyroid glands of captive mule deer *(Odocoileus hemionus)*. Data were obtained by giving acute oral doses of Na^{131}I to males and females of various ages during three seasonal periods and periodically measuring thyroid radioactivity with an external counter. Dose fractions appearing in the thyroid averaged 0.32 in winter, 0.22 in spring, and 0.20 in summer. Effective ^{131}I elimination half times averaged 6.5 days among all individuals, 5.7 days for juveniles, and 7.3 days for adults. Age and seasonal differences in ^{131}I uptake and loss rate were correlated with food and stable iodine intake and with body weight. Thyroid ^{131}I activity reached maximum levels within 3 days after dosing. A mathematical model employing some of the parameters determined was found to be applicable to observed data on radioiodine levels in Colorado deer after contamination of the environment by products of nuclear fission.

Hawkins, R. E., and W. D. Klimstra. DEER TRAPPING CORRELATED WITH WEATHER FACTORS. *Trans. Ill. State Acad. Sci.* 63(2): 198-201. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 52*

[Southern Ill. Univ., Carbondale.]

Hawkins, R. E., W. D. Klimstra, and D. C. Autry. SIGNIFICANT MORTALITY FACTORS OF DEER ON CRAB ORCHARD NATIONAL WILDLIFE REFUGE. *Trans. Ill. State Acad. Sci.* 63(2): 202-206. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 53*
[Southern Ill. Univ., Carbondale.]

Hawkins, R. E., W. D. Klimstra, and D. C. Autry. DISPERSAL OF DEER FROM CRAB ORCHARD NATIONAL WILDLIFE REFUGE. *J. Wildl. Mgmt.* 35(2): 216-220, 1 fig. Apr. 1971. *WR 142: 53*
[Southern Ill. Univ., Carbondale.] Abstract: Six hundred one of 687 white-tailed deer *(Odocoileus virginianus)*, marked and released on Crab Orchard National Wildlife Refuge during 1962-68, were subsequently observed one or more times on the study area. Eighty of the deer subsequently observed (13%) were killed off the area. Over 50% of the marked deer killed off the area were yearling bucks. For all years, 22% of the marked yearling bucks known to be alive from field observations moved from the study area and were killed an average of 5 miles from initial capture sites. The percentage of deer moving off the study area annually appeared to be directly related to population levels. November was the principal time of dispersal. Data indicated that substantial numbers of the deer harvested annually in Williamson County were furnished by the study area.

Kohn, Bruce E., and Jack J. Mooty. SUMMER HABITAT OF WHITE-TAILED DEER IN NORTH-CENTRAL MINNESOTA. *J. Wildl. Mgmt.* 35(3): 476-487, 4 figs. July 1971. *WR 142: 53*
[Wis. Dep. Natur. Resour., Rhinelander.] Abstract: Habitat types used and food habits of white-tailed deer *(Odocoileus virginianus)* were studied in north-central Minnesota during the summers of 1968 and 1969. Home ranges of three radio-frequency marked does varied from 167 to 471 acres, but use of local areas varied. Upland deciduous and upland mixed areas were used intensively by deer, whereas fields and lowland areas were avoided. Use of upland conifer, cutover, plantation, and right-of-way habitat types was approximately proportional to availability. Use of types varied with age of the stand, period of summer, and time of day. Browse accounted for 68% of 6,925 instances of plant use at 31 feeding sites, and 63% of the volume of nine rumens examined was comprised largely of leaves and current year's growth of plants under 3 feet high. Forbs accounted for 25% of use at feeding sites and 32% of volume of rumens examined. Grasses and mushrooms comprised the remainder of the diet. Preference for forage species varied in relation to habitat type and to phenology. The most important factor governing deer use of habitat types was availability of preferred forage species.

Kramer, Theodore T., Julius G. Nagy, and Thomas A. Barber. DIARRHEA IN CAPTIVE MULE DEER FAWNS ATTRIBUTED TO *ESCHERICHIA COLI*. *J. Wildl. Mgmt.* 35(2): 205-209. Apr. 1971. *WR 142: 53*
[Univ. Saskatchewan, Saskatoon, Canada.] Abstract: Diarrhea and death occurred in captive mule deer fawns *(Odocoileus hemionus)*. Bacteriological examination indicated the prevalence of three *Escheriohia coli* strains--O16:K3,6,12:H48; O117:K80:H21, and OX14:K80:H21--from rectal swabs taken on consecutive days from 10 fawns. The ligated intestinal loop test, used on one calf, suggested the enteropathogenicity of the *E. coli* isolates.

Mansell, W. Dan. ACCESSORY CORPORA LUTEA IN OVARIES OF WHITE-TAILED DEER. *J. Wildl. Mgmt.* 35(2): 369-374, 3 figs. Apr. 1971. *WR 142: 53*
[508 Speedvale Ave. East, Guelph, Ontario, Canada.] Abstract: A high correlation ($r = 0.90$) between the number of corpora lutea and the age of white-tailed deer *(Odocoileus virginianus)* suggests that pigmented scars are long-lived and that ovarian analysis is a valid method of determining productivity. Accessory corpora lutea accounted for 26% of the luteal tissues in pregnant females. Mean numbers and sizes of current corpora lutea of estrus, current and degenerating corpora lutea of pregnancy, and accessory corpora lutea are established for does at various stages in the reproductive cycle.

Mautz, William W. CONFINEMENT EFFECTS ON DRY-MATTER DIGESTIBILITY COEFFICIENTS DISPLAYED BY DEER. *J. Wildl. Mgmt.* 35(2): 366-368. Apr. 1971. *WR 142: 54*
[Univ. N.H., Durham.] Abstract: The effect of severe confinement on apparent dry-matter digestibility coefficients of two white-tailed deer *(Odocoileus virginianus)* was investigated using the radioisotope ^{51}Cr as a food marker. When first placed in collection crates, the deer showed a marked decrease in their ability to digest a standard pelleted ration. By the 9th to 12th day of confinement the digestibility coefficients of these deer were similar to coefficients they had displayed immediately prior to confinement. The level of food intake also decreased for both animals upon confinement. For one of the animals, food consumption returned to the preconfinement level 21 days after confinement; however, the other deer still had a significantly decreased level of consumption after 25 days of confinement.

Oh, John H., Milton B. Jones, William M. Longhurst, and Guy E. Connolly. DEER BROWSING AND RUMEN MICROBIAL FERMENTATION OF DOUGLAS-FIR AS AFFECTED BY FERTILIZATION AND GROWTH STAGE. *Forest Sci.* 16(1): 21-27. 1970. [From Biol. Abstr. 52(8), 1971.] *WR 142: 54*
[Univ. Calif., Davis.]

Prestwood, Annie K., James F. Smith, and John Brown. LUNGWORMS IN WHITE-TAILED DEER OF THE SOUTHEASTERN UNITED STATES. *J. Wildl. Dis.* 7(3): 149-154, 1 fig. July 1971. *WR 142: 54*
[Univ. Ga., Athens.]

Prestwood, Annie K., James F. Smith, and William E. Mahan. GEOGRAPHIC DISTRIBUTION OF *GONGYLONEMA PULCHRUM, GONGYLONEMA VERRUCOSUM,* AND *PARAMPHISTOMUM LIORCHIS* IN WHITE-TAILED DEER OF THE SOUTHEASTERN UNITED STATES. *J. Parasitol.* 56(1): 123-127, 1 fig. Feb. 1970. *WR 142: 54*
[Univ. Ga., Athens.] Abstract: The upper digestive tracts of 788 white-tailed deer *(Odocoileus virginianus)* from 13 southeastern states and St. Croix of the U.S. Virgin Islands were examined for helminths. *Gongylonema pulchrum* was found in 457 (57.9%) deer from Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. *Gongylonema verrucosum* was present in 131 (16.6%) deer from Alabama, Florida, Georgia, Louisiana, North Carolina, and South Carolina. Rumen flukes, *Paramphistomum liorchis*, were harbored by 58 (7.3%) deer from Alabama, Florida, Georgia, Louisiana, and South Carolina. No helminths were found in the upper digestive tract of 10 deer from St. Croix.

Richie, William F. REGIONAL DIFFERENCES IN WEIGHT AND ANTLER MEASUREMENTS OF ILLINOIS DEER *(ODOCOILEUS HEMIONUS). Trans. Ill. State Acad. Sci.* 63(2): 189-197. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 54*
[Southern Ill. Univ., Carbondale.]

Rieck, Carroll A., and E. Reade Brown. EXAMPLES OF ANTLER VARIATION IN BLACK-TAILED DEER. *Murrelet* 52(1): 10-12, 2 figs. Jan.-Apr. 1971. *WR 142: 54*
"Odocoileus hemionus columbianus."

Roberts, I. H., W. P. Meleney, and R. E. Pillmore. EAR-SCAB MITES, *PSOROPTES CUNICULI* (ACARINA: PSOROPTIDAE), IN CAPTIVE MULE DEER. *J. Parasitol.* 56(5): 1039-1040. Oct. 1970. *WR 142: 54*
[Agr. Res. Serv., P.O. Box 705, Albuquerque, N. Mex.] *"Odocoileus hemionus."*

Samuel, William M. PARASITES OF WHITE-TAILED DEER IN RELATION TO EPIZOOTIOLOGICAL FACTORS. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 299-300. Aug. 1970. Abstract only. *WR 142: 54*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Samuel, W. M., D. O. Trainer, and W. C. Glazener. PHARYNGEAL BOTFLY LARVAE IN WHITE-TAILED DEER. *J. Wildl. Dis.* 7(3): 142-146. July 1971. *WR 142: 55*
[Univ. Alberta, Edmonton, Alberta, Canada.] Abstract: Pharyngeal botfly *(Cephenemyia* spp.) larvae were found in 76 (17%) of 446 white-tailed deer *(Odocoileus virginianus)* from the Welder Refuge, San Patricio County, coastal south Texas (1961-1968). Seventy-one of the 76 infections by 2nd- and 3rd-stage larvae occurred in deer collected during fall and winter, suggesting a winter generation of approximately 6 months. The highest prevalence occurred in deer from brushy plant communities with a high, relatively continuous canopy. A higher prevalence in mature males (74%) compared with females (29%) during winter was correlated with behavioral differences between sexes during the breeding season.

Stone, Ward B., William T. Hesselton, and John T. Palmateer. MICROPHTHALMIA IN A WHITE-TAILED DEER. *N.Y. Fish & Game J.* 17(2): 133-134, 2 figs. July 1970. *WR 142: 55*

Strickland, Robert K., Robert R. Gerrish, Theodore P. Kistner, and Forest E. Kellogg. THE WHITE-TAILED DEER, *ODOCOILEUS VIRGINIANUS*, A NEW HOST FOR *PSOROPTES* SP. *J. Parasitol.* 56(5): 1038. Oct. 1970. *WR 142: 55*
[Agr. Res. Serv., Beltsville, Md.]

Thomas, Donald Charles. THE OVARY, REPRODUCTION, AND PRODUCTIVITY OF COLUMBIAN BLACK-TAILED DEER. *Ph.D. thesis, Univ. British Columbia.* 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa.] *WR 142: 55*
Ovarian changes, patterns of reproduction, and age-specific productivity of female Columbian black-tailed deer *(Odocoileus hemionus columbianus)* on Vancouver Island were elucidated largely by examination of serial, stained sections of ovaries from 444 females.

Torgerson, Oliver, and William H. Pfander. CELLULOSE DIGESTIBILITY AND CHEMICAL COMPOSITION OF MISSOURI DEER FOODS. *J. Wildl. Mgmt.* 35(2): 221-231, 3 figs. Apr. 1971. *WR 142: 55*
[Mo. Dept. Conserv., Columbia.] Abstract: This paper reports the in vitro digestibility of cellulose and the chemical composition of 32 preferred foods of Missouri white-tailed deer *(Odocoileus virginianus)*. The average cellulose content of winter forages was 34% and of summer forages, 25%. The digestibility of cellulose by microorganisms from ruminally fistulated deer averaged 12% for 13 winter foods and 51% for 19 summer forage species. Cellulose content and cellulose digestibility of leaf tissue of herbaceous and woody plants collected in the summer were positively correlated, but cellulose content and cellulose digestibility were not correlated in woody twig tissues and other foods collected in the winter. Chemical analysis of the 32 preferred foods indicated low protein and phosphorus contents during much of the year. Furthermore, the calcium:phosphorus ratio was unfavorable for these forage species during both summer and winter.

Urness, Philip J., Win Green, and Ross K. Watkins. NUTRIENT INTAKE OF DEER IN ARIZONA CHAPARRAL AND DESERT HABITATS. *J. Wildl. Mgmt.* 35(3): 469-475. July 1971. *WR 142: 55*
[Ariz. State Univ., Tempe.] Abstract: Chemical analyses and in vitro digestibility of hand-harvested forages comprising seasonal diets of desert mule deer *(Odocoileus hemionus crooki)* and Coues white-tailed deer *(O. virginianus couesi)* were combined with diet-composition data, to estimate qualitative nutrient intake. Despite differences in habitat and composition of diet, the two deer species have similar intakes of protein, phosphorus, calcium, and fiber. Digestibility is somewhat more variable. Phosphorus appears inadequate in early winter, although selection by deer for higher-quality plants and plant parts may compensate for this factor. Browse and fruits of woody plants exceed herbaceous forages in percentage of annual composition of diet, but the latter contribute disproportionately more phosphorus. Other nutrients tested appeared to be adequate, but quantitative intake was not measured.

DEER (Odocoileus)--Continued

Willis, N. G., P. N. Corey, J. B. Campbell, and L. W. Macpherson. DEVELOPMENT AND STATISTIC EVALUATION OF A PLAQUE ASSAY FOR THE VIRUS OF EPIZOOTIC HEMORRHAGIC DISEASE OF DEER. *Canadian J. Microbiol.* 16(12): 1293-1301, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 56*
[Univ. Toronto, Toronto, Ontario, Canada.]

Woolf, Alan. IMMOBILIZATION OF CAPTIVE AND FREE-RANGING WHITE-TAILED DEER *(ODOCOILEUS VIRGINIANUS)* WITH ETORPHINE HYDROCHLORIDE. *J. Amer. Vet. Med. Ass.* 157(5): 636-640. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 56*
[Rachelwood Wildl. Res. Preserv., New Florence, Pa.]

MAMMALS--MARINE

Bartholomew, George A. A MODEL FOR THE EVOLUTION OF PINNIPED POLYGYNY. *Evolution* 24(3): 546-559. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 56*
[Univ. Calif., Los Angeles.]

Besharse, Joseph C. MATURITY AND SEXUAL DIMORPHISM IN THE SKULL, MANDIBLE, AND TEETH OF THE BEAKED WHALE, *MESOPLODON DENSIROSTRIS*. *J. Mammal.* 52(2): 297-315, 8 figs. May 1971. *WR 142: 56*
[Southern Ill. Univ., Carbondale.]

Best, P. B. EXPLOITATION AND RECOVERY OF RIGHT WHALES *EUBALAENA AUSTRALIS* OFF THE CAPE PROVINCE. *S. Afr. Div. Sea Fish. Invest. Rep.* 80: 1-20, illus. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 56*

Bruyns, W. F. J. Morzer. SIGHT RECORDS AND NOTES ON THE FALSE KILLER WHALE, *PSEUDORCA CRASSIDENS* (OWEN, 1846). *Säugetierk. Mitt.* 17(4): 351-356, illus. 1969. [From Biol. Abstr. 52(5), 1971. In English with German summ.] *WR 142: 56*

Fisher, H. Dean, and Richard J. Harrison. REPRODUCTION IN THE COMMON PORPOISE *(PHOCOENA PHOCOENA)* OF THE NORTH ATLANTIC. *J. Zool.* (London) 161(4): 471-486, illus. 1970. [From Biol. Abstr. 52(3), 1971.] *WR 142: 56*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Gambell, Ray. WEIGHT OF A SPERM WHALE, WHOLE AND IN PARTS (FISHERY). *S. Afr. J. Sci.* 66(7): 225-227, illus. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 56*
[British Mus. Natur. Hist., London, England.]

Gentry, Roger Lee. SOCIAL BEHAVIOR OF THE STELLER SEA LION. *Ph.D. thesis, Univ. Calif.* (Santa Cruz). 119 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 56*
The Año Nuevo Island population consisted of 1,600 to 1,800 *Eumetopias jubatus* in June and July. Of these, approximately 650 were neonates, 900 to 1,000 were females, and about 200 were males. The ratio between adult females and adult males was 10:1, but of nearly 700 young whose sex was determined, the sex ratio at birth was 1.08 females to 1 male.--From abstr.

Harrison, Richard J., and Robert L. Brownell, Jr. THE GONADS OF THE SOUTH AMERICAN DOLPHINS, *INIA GEOFFRENSIS, PONTOPORIA BLAINVILLEI*, AND *SOTALIA FLUVIATILIS*. *J. Mammal.* 52(2): 413-419, 1 fig. May 1971. *WR 142: 56*
[Cambridge Univ., Cambridge, England.]

Kawamura, Akito. FOOD OF SEI WHALE *(BALAENOPTERA BOREALIS)* TAKEN BY JAPANESE WHALING EXPEDITIONS IN THE ANTARCTIC SEASON 1967/68. *Sci. Rep. Whales Res. Inst.* 22. p. 127-152. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 56*

Kridler, E., D. L. Olsen, and G. C. Whittow. BODY TEMPERATURE OF THE HAWAIIAN MONK SEAL. *J. Mammal.* 52(2): 476. May 1971. *WR 142: 56*
[Bur. Sport Fisheries & Wildl., Kailua, Hawaii.] The mean rectal temperature of five young seals was 36.9°C, with a range of 35.9° to 37.8°.

Krylov, V. I. [SIZE-WEIGHT CHARACTERISTIC AS AN INDEX OF ONTOGENETIC-SEXUAL DIMORPHISM IN THE WALRUS *ODOBAENUS ROSMARUS DIVERGENS* ILL.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(5): 18-24. 1970. [From Biol. Abstr. 52 (10), 1971. In Russian with English summ.] *WR 142: 57*

McIlhattan, T. J., J. W. Martin, R. J. Wagner, and J. O. Iversen. ISOLATION OF *LEPTOSPIRA POMONA* FROM A NATURALLY INFECTED CALIFORNIA SEA LION, SONOMA COUNTY, CALIFORNIA. *J. Wildl. Dis.* 7(3): 195-197. July 1971. *WR 142: 57*
[Sonoma State Coll., Rohnert Park, Calif.]

Nasu, Keiji, and Yasuaki Masaki. SOME BIOLOGICAL PARAMETERS FOR STOCK ASSESSMENT OF THE ANTARCTIC SEI WHALE. *Sci. Rep. Whales Res. Inst.* 22. p. 63-74. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 57*
[Far Seas Fish. Res. Lab., Shimizu, Japan.] *"Balaenoptera borealis."*

Neiland, K. A., D. W. Rice, and B. L. Holden. HELMINTHS OF MARINE MAMMALS, I. THE GENUS *NASITREMA*, AIR SINUS FLUKES OF DELPHINID CETACEA. *J. Parasitol.* 56 (2): 305-316, 9 figs. Apr. 1970. *WR 142: 57*
[Alaska Dep. Fish & Game, Fairbanks.] Five new species of *Nasitrema* Ozaki, 1935, are described from delphinid porpoises collected in the eastern Pacific. A sample of 165 specimens of one species of *Nasitrema* from a single host specimen provides insight into the probable normal, adult, morphological variability displayed by this trematode genus. A key for the preliminary identification of species of *Nasitrema* is presented.--From abstr.

Ohsumi, Seiji, Yasuaki Masaki, and Akito Kawamura. STOCK OF THE ANTARCTIC MINKE WHALE. *Sci. Rep. Whales Res. Inst.* 22. p. 75-125, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 57*
"Balaenoptera acutorostrata."

Patashnik, Max, and Paul Kangas. "TEK-FOOD," A PASTEURIZED WHOLE FISH RATION FOR CAPTIVE MARINE MAMMALS. *Lab. Anim. Care* 21(3): 406-409. June 1971. *WR 142: 57*
[Nat. Marine Fisheries Serv. Tech. Lab., Seattle, Wash.] A compact, easy-to-handle, pasteurized, storage-stable food ration from whole fresh fish and seaweed. Owning to its "weiner-like" cohesive texture, it may be cut into convenient sub-units for feeding. The product is currently being produced in bulk quantities for field-test evaluatio of marine and aquarium facilities in the continental United States and Hawaii.--From summ.

Schultz, Wolfhart. DER POTTWAL *(PHYSETER CATODON* LINNAEUS, 1758*)* VON WESTERHEVER/EIDERSTEDT. [THE SPERM WHALE *(PHYSETER CATODON* LINNAEUS, 1758*)* FROM WESTERHEWER/EIDERSTEDT.] *Z. Säugetierk.* 35(1): 22-27, illus. 1970. [From Biol. Abstr. 52(2), 1971. In German with English summ.] *WR 142: 57*
[Inst. Haustierkunde, Univ., Kiel, Germany.]

Sergeant, D. E., A. W. Mansfield, and B. Beck. INSHORE RECORDS OF CETACEAE FOR EASTERN CANADA, 1949-68. *J. Fish. Res. Board Canada* 27(11): 1903-1915, illus. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 57*
[Arctic Biol. Sta., Ste. Anne de Bellevue, Quebec, Canada.]

Van Bree, P. J. H., R. Mizoule, and G. Petit. SUR TROIS SPECIMENS DE *STENELLA EUPHROSYNE* (GRAY, 1846) (CETACEA, DELPHINIDAE) DE MEDITERRANEE (REGION DE BANYULS-SUR-MER, FRANCE). [CONCERNING 3 SPECIMENS OF *STENELLA EUPHROSYNE* (GRAY, 1846) (CETACEA, DELPHINIDAE) OF THE MEDITERRANEAN (BANYULS-SUR-MER REGION, FRANCE).] *Vie Milieu Ser. A: Biol. Mar.* 20(2A): 447-459. 1969. [From Biol. Abstr. 52(5), 1971. In French.] *WR 142: 57*
[Zool. Mus. Plantage Middenlaan, 53 Amsterdam, Netherlands.]

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[Forest & Range Exp. Sta., Rangiora, New Zealand.] *"Trichosurus vulpecula."*

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[Northwestern State Univ. La., Natchitoches.]

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[Univ. Canterbury, Christchurch, New Zealand.]

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[U.S. Med. Res. Unit, Inst. Med. Res., Kuala Lumpur, Malaysia.] Studies in northern Thailand and West Malaysia.

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[Kruger Nat. Park, Skukuza, South Africa.] The ears were freeze-branded with a copper branding instrument chilled to about -70°C in a mixture of solid CO_2 (dry ice) and 95% ethyl alcohol.

OTHER MAMMALS--Continued

Ronnefeld, Uta. VERBREITUNG UND LEBENSWEISE AFRIKANISCHER FELOIDEA (FELIDAE ET HYAENIDAE). [DISTRIBUTION AND MODE OF LIFE OF AFRICAN FELOIDEA (FELIDAE AND HYAENIDAE).] *Säugetierk. Mitt.* 17(4): 285-350. 1969. [From Biol. Abstr. 52 (5), 1971. In German with English summ.] *WR 142: 59*

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[Natal Parks, Game & Fish Preservation Board, Pietermaritzburg, South Africa.] A male *Genetta rubiginosa* was acquired when approximately four weeks old and kept as a free roaming domestic pet until the animal was a year old. Records of the animal's growth and development were kept. The genet was nocturnal and spent the daylight hours in dark secluded places. Various live animals were offered, of which insects, birds and mice were killed and eaten. The young animal was very playful, indulging in running games, fighting games, and hiding games.--From summ.

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[Univ. New South Wales, Sydney, Australia.]

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[Centro Conservacão Natureza, Caixa Postal 3545, ZC-00, Rio de Janeiro, Brazil.] Taxonomy, geographical distribution, food habits, reproduction, enemies, habitats, and behavior in captivity of *Myrmecophaga tridactyla.*

Wallace, Clive, and Neil Fairall. CHROMOSOME ANALYSIS IN THE KRUGER NATIONAL PARK / THE CHROMOSOMES OF THE SPOTTED HYAENA *CROCUTA CROCUTA* ERXLEBEN. *Koedoe* no. 13. p. 151-155, 4 figs. 1970. *WR 142: 59*

[Univ. Witwatersrand, Johannesburg, South Africa.]

Wood, D. H. AN ECOLOGICAL STUDY OF *ANTECHINUS STUARTII* (MARSUPIALIA) IN A SOUTH-EAST QUEENSLAND RAIN FOREST. *Australian J. Zool.* 18(2): 185-207, illus. 1970. [From Biol. Abstr. 52(3), 1971.] *WR 142: 59*

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[South African Inst. Med. Res., Johannesburg, South Africa.]

Zumpt, F., and H. Wetzel. FLY PARASITES (DIPTERA: OESTRIDAE AND GASTEROPHILIDAE) OF THE AFRICAN ELEPHANT *LOXODONTA AFRICANA* (BLUMENBACH) AND THEIR PROBLEMS. *Koedoe* no. 13. p. 109-121, 9 figs. 1970. *WR 142: 59*

[South African Inst. Med. Res., Johannesburg, South Africa.] *"Cobboldia chrysidiformis, C. loxodontis, C. elephantis,* and *C. roverei."*

BIRDS--GENERAL

Bolotnikov, A. M., S. M. Khazieva, A. I. Shurakov, and A. A. Pufaev. [NOTES ON THE FERTILITY AND NESTING TIMES OF SOME BIRDS OF THE URAL FORELAND.] *Uch. Zap. Perm. Gos. Pedagog. Inst.* 69: 67-72. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I412. In Russian.] *WR 142: 59*

Harrison, C. J. O. THE IDENTIFICATION OF THE EGGS OF THE SMALLER INDIAN CUCKOOS. *J. Bombay Natur. Hist. Soc.* 66(3): 478-488. 1969. [From Biol. Abstr. 52(4), 1971.] *WR 142: 60*

Harrison, C. J. O. FURTHER NOTES ON EGGS OF NEW GUINEA BIRDS. *Emu* 171(2): 85-86. Summer 1971. *WR 142: 60*
[British Mus. (Natur. Hist.), Cromwell Rd., London, England.] See *WR 140: 123* for earlier paper.

Plesskii, P. V. [INFORMATION ON THE BIOLOGY OF THE AQUATIC BIRDS OF KIROV OBLAST.] *Tr. Kirov. Sel'skokhoz. Inst.* 21(46): 53-71. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I445. In Russian.] *WR 142: 60*

Schoener, Thomas W. LARGE-BILLED INSECTIVOROUS BIRDS: A PRECIPITOUS DIVERSITY GRADIENT. *Condor* 73(2): 154-161, 3 figs. Summer 1971. *WR 142: 60*
[Harvard Univ., Cambridge, Mass.] "In conclusion, a large portion of the increase in bird species diversity in the tropics is that involving the addition of large-billed insectivorous forms, and this increase may be due to a greater availability of food along one end of a 'critical' niche dimension."--Courtesy/ Paul A. Stewart.

Snow, D. W. EVOLUTIONARY ASPECTS OF FRUIT-EATING BY BIRDS. *Ibis* 113(2): 194-202. Apr. 1971. *WR 142: 60*
[British Mus. (Natur. Hist.), Tring, Hertfordshire, England.]

Stepanyan, L. S. [HYPSOMORPHIC EFFECT OF REPRODUCTION IN BIRDS.] *Zh. Obshch. Biol.* 31(5): 609-614. 1970. [From Biol. Abstr. 52(7), 1971. In Russian with English summ.] *WR 142: 60*
[V. I. Lenin Moscow State Pedagog. Inst., Moscow, USSR.]

Willson, Mary F. ECOLOGICAL OVERLAP AND BILL-SIZE DIFFERENCES: A COMMENT. *Amer. Midland Natur.* 86(1): 215-217. July 1971. *WR 142: 60*
[Univ. Ill., Champaign.] Abstract: Among four species of tropical tanagers, similarity of bill length is associated with similarity of foraging. Some problems of relating intensity of competition and means of reducing competition to morphological character differences are discussed.

BIRDS--TECHNIQUES

Baysinger, Earl B. A HOOP-NET TRAP FOR PASSERINE BIRDS--ADDITIONAL COMMENTS. *Bird-Banding* 41(4): 311. Oct. 1970. *WR 142: 60*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Traps must be checked and birds removed at least every 24 hours.--Courtesy/ Paul A. Stewart.

Berthold, Peter. DIE LAPAROTOMIE BEI VOEGELN: EIN HILFSMITTEL ZUR GESCHLECHTSBESTIMMUNG UND ZUR BEOBACHTUNG DES GONADENZYKLUS. [LAPAROTOMY OF BIRDS: AN AID TO THE DETERMINATION OF SEX AND FOR THE OBSERVATION OF THE SEXUAL CYCLE.] *Zool. Gart.* 37(6): 271-279, illus. 1969. [From Biol. Abstr. 52(8), 1971. In German with English summ.] *WR 142: 60*
[Max Planck Inst., Radolfzell, Germany.]

Blondel, J., C. Ferry, and B. Frochot. LA METHODE DES INDICES PONCTUELS D'ABONDANCE (I.P.A.) OU DES RELEVES D'AVIFAUNE PAR "STATIONS D'ECOUTE." [THE PUNCTUAL INDEXES OF ABUNDANCE (P.I.A.) METHOD OR AVIFAUNA CENSUS BY MEANS OF LISTENING STATIONS.] *Alauda* 38(1): 55-71, illus. 1970. [From Biol. Abstr. 52(2), 1971. In French.] *WR 142: 60*
[Sta. Biol. Tour du Valat, Le Sambuc, France.]

Erskine, Anthony J. NEST RECORD CARD PROGRAM IN CANADA. *Canadian Field-Natur.* 85(1): 3-11, 3 figs. Jan.-Mar. 1971. *WR 142: 61*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: A brief account is given of the purposes of nest record card programs, their history and present organization in Canada, problems in use of nest record data, examples of papers based on Canadian nest records, and prospects for their future use. The importance of nest recording as an aid in conservation education is emphasized.

Grant, Gilbert S., and Thomas L. Quay. SEX AND AGE CRITERIA IN THE SLATE-COLORED JUNCO. *Bird-Banding* 41(4): 274-278. Oct. 1970. *WR 142: 61*
[N.C. State Univ., Raleigh.] Criteria for sexing and aging slate-colored juncoes *(Junco hyemalis)* from wing measurements and from brownness of the plumage.--Courtesy/ Paul A. Stewart.

Mallet, John. HAND-REARING AND KEEPING BABY SWALLOWS. *Avicultural Magazine* 76(4): 148-149. July-Aug. 1970. *WR 142: 61*
[Jersey Zoo Park, Trinity, Jersey, England.] *"Hirundo rustica."*

Yunick, Robert P. AN EXAMINATION OF CERTAIN AGING AND SEXING CRITERIA FOR THE CEDAR WAXWING *(BOMBYCILLA CEDRORUM). Bird-Banding* 41(4): 291-299. Oct. 1970. *WR 142: 61*
[1527 Myron St., Schenectady, N.Y.] The use of the throat color and presence or absence of wax appendages for aging and sexing these birds are discussed.--Courtesy/ Paul A. Stewart.

BIRDS--MORPHOLOGY & PHYSIOLOGY

Belhache, Jean. CONTRIBUTION À LA "GERONTORNITHOLOGIE": MÉSANGES ET GRIMPEREAUX. [CONTRIBUTION TO "GERONTORNITHOLOGY": TITMICE AND TREE-CREEPERS.] *Nos Oiseaux Bull. Soc. Romande Etude Protect. Oiseaux* 30(328): 192-195. 1970. [From Biol. Abstr. 52(3), 1971. In French.] *WR 142: 61*

Blyumental', T. I., and V. R. Dol'nik. [BODY WEIGHT, WING LENGTH, FAT DEPOSITS AND FLIGHT IN BIRDS.] *Zool. Zh.* 49(7): 1069-1072. 1970. [From Biol. Abstr. 52(4), 1971. In Russian with English summ.] *WR 142: 61*
[Inst. Zool., Acad. Sci. USSR, Leningrad, USSR.]

Dobrinskii, L. [ON USE OF COLOR CHARACTERS AS GENETIC MARKERS IN A BIRD POPULATION.] *Ekologiya* 1970(1): 100. 1970. [From Bird-Banding 42(1), 1971.] *WR 142: 61*

Lyuleeva, D. S. [FLIGHT ENERGY IN SWALLOWS AND SWIFTS.] *Dokl. Akad. Nauk SSSR* 190(6): 1467-1469. 1970. [From Bird-Banding 41(4), 1970. In Russian.] *WR 142: 61*
"Hirundo rustica, Delichon urbica, and *Apus apus."*

Nisbet, I. C. T., J. Baird, D. V. Howard, and K. S. Anderson. STATISTICAL COMPARISON OF WING-LENGTHS MEASURED BY FOUR OBSERVERS. *Bird-Banding* 41(4): 307-308. Oct. 1970. *WR 142: 61*
[Mass. Audubon Soc., Lincoln.] There were significant differences in the wing measurements of the same birds made by four observers.--Courtesy/ Paul A. Stewart.

Pearson, D. J. WEIGHTS OF SOME PALAEARCTIC MIGRANTS IN SOUTHERN UGANDA. *Ibis* 113(2): 173-184, 7 figs. Apr. 1971. *WR 142: 61*
[Univ. Nairobi, Nairobi, Kenya.] *"Sylvia borin, Phylloscopus trochilus, Hirundo rustica, Acrocephalus scirpaceus, A. schoenobaenus, Motacilla flava,* and *Riparia riparia."*

Pohl, Hermann. SEASONAL VARIATION IN METABOLIC FUNCTIONS OF BRAMBLINGS. *Ibis* 113(2): 185-193, 2 figs. Apr. 1971. *WR 142: 62*
[Max-Planck Inst. Verhaltensphysiol., 8131 Erling-Andechs, Germany.]

Smith, Neal Griffith. BIOVARIANISM IN AN INSULAR POPULATION OF A NEOTROPICAL BIRD. *Amer. Midland Natur.* 86(1): 238-241, 1 fig. July 1971. *WR 142: 62*
[Smithsonian Trop. Res. Inst., Box 2072, Balboa, Canal Zone.] Abstract: Birds normally have only a single left ovary and oviduct; yet scattered examples of biovarianism have been reported, though previously not as a population phenomenon. In Panama, certain island populations of the passerine *Thamnophilus doliatus* display a high frequency of gonadal abnormalities in the females including biovarianism, while mainland populations of this species do not. A hypothesis is offered suggesting a possible adaptive basis for this condition in certain birds.

Steiner, Hans M. DIE VOM SCHEMA DER PASSERES ABWEICHENDE HANDSCHWINGEN-MAUSER DES ROHRSCHWIRLS *(LOCUSTELLA LUSCINIOIDES)*. [THE PATTERN OF THE WING OF THE SAVIS WARBLER *(LOCUSTELLA LUSCINIOIDES)* WHICH IS DEVIATED FROM THE PATTERN OF PASSERES.] *J. Ornithol.* 111(2): 230-236, illus. 1970. [From Biol. Abstr. 52(6), 1971. In German with English summ.] *WR 142: 62*
[Vienna, Austria.]

Stresemann, Erwin, and Vesta Stresemann. UEBER DIE VOLLMAUSER DES ROHRSCHWIRLS *(LOCUSTELLA LUSCINIOIDES)*. [ON THE COMPLETE MOLT OF THE SAVIS WARBLER *(LOCUSTELLA LUSCINIOIDES)*.] *J. Ornithol.* 111(2): 237-239. 1970. [From Biol. Abstr. 52(6), 1971. In German with English summ.] *WR 142: 62*

Yarbrough, Charles Gerald. THE INFLUENCE OF DISTRIBUTION AND ECOLOGY ON THE THERMOREGULATION OF SMALL BIRDS. *Ph.D. thesis, Univ. Fla.* 79 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 62*
Data from the present study and the literature show that the energetics of thermoregulation in small birds are accurately described by the Newtonian model of heat loss. The level of body temperature is closely correlated with basal metabolic rate, thermal conductance, and body weight.

BIRDS--BEHAVIOR

Belhache, J. PRÉCISIONS SUR CERTAINS ASPECTS DE LA BIOLOGIE DE LA MÉSANGE A LONGUE QUEUE *(AEGITHALOS CAUDATUS* LINNE): I. DETERMINATION DE LA DATE DE CONSTRUCTION DES PREMIERS NIDS. [SPECIFICATIONS CONCERNING CERTAIN ASPECTS OF LONG-TAILED TITMOUSE *(AEGITHALOS CAUDATUS* LINNE) BIOLOGY. I. DETERMINATION OF THE DATE OF CONSTRUCTION OF THE FIRST NESTS.] *Alauda* 38(1): 44-45. 1970. [From Biol. Abstr. 52(2), 1971. In French.] *WR 142: 62*

Brown, Peter, and others. SISKINS FEEDING FROM NUT BAGS. *British Birds* 64(1): 35-36. Jan. 1971. *WR 142: 62*
[Stepaside, Clun, Craven Arms, Shropshire, England.]

Carruthers, R. K., W. Horton, and D. P. Vernon. DISTRIBUTION, HABITS AND SEXUAL DIMORPHISM OF THE WESTERN GRASS-WREN *AMYTORNIS TEXTILIS BALLARAE* CONDON IN NORTHWESTERN QUEENSLAND. *Mem. Queensland Mus.* 15(4): 335-341. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 62*
[Queensland Mus., Brisbane, Australia.]

Danks, H. V. A NOTE ON THE EARLY SEASON FOOD OF ARCTIC MIGRANTS. *Canadian Field-Natur.* 85(1): 71-72. Jan.-Mar. 1971. *WR 142: 62*
[Canada Dep. Agr., Ottawa, Ontario, Canada.] *"Erolia maritima, Stercorarius longicaudus, Phalaropus fulicarius,* and *Pleotrophenax nivalis."*

Diamond, Jared M. ECOLOGICAL CONSEQUENCES OF ISLAND COLONIZATION BY SOUTH-WEST PACIFIC BIRDS: I. TYPES OF NICHE SHIFTS. *Proc. Nat. Acad. Sci. USA* 67(2): 529-536, illus. 1970. [From Biol. Abstr. 52(9), 1971.] *WR 142: 63*
[Univ. Calif. Med. Center, Los Angeles.]

Eriksson, Kalervo. ECOLOGY OF THE IRRUPTION AND WINTERING OF FENNOSCANDIAN REDPOLLS *(CARDUELIS FLAMMEA* COLL.). *Ann. Zool. Fenn.* 7(3): 273-282, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 63*
[Box 10350, Helsinki, Finland.]

Goodwin, Derek. ANTING BY RED-CHEEKED AND BLUE-HEADED CORDON-BLEUS *(URAEGINTHUS BENGALUS* AND *U. CYANOCEPHALUS). Avicult. Mag.* 77(3): 88-93, [4 figs.]. May-June 1971. *WR 142: 63*

Gravatt, David J. ASPECTS OF HABITAT USE BY NEW ZEALAND HONEYEATERS, WITH REFERENCE TO OTHER FOREST SPECIES. *Emu* 71(2): 65-72, 4 figs. Apr. 1971. *WR 142: 63*
[Univ. Queensland, St. Lucia, Queensland, Australia.]

Hardy, Eric, and others. PIGEONS, CROWS AND OTHER SPECIES BUILDING NESTS OF WIRE. *British Birds* 64(2): 77-80. Feb. 1971. *WR 142: 63*
[47 Woodsorrel Rd., Liverpool, England.]

Ion, I., and N. Valenciuc. COMPORTAREA VRĂBIEI DE CÎMP *(PASSER MONTANUS* L.) ÎN TIMPUL ÎMPERECHERII DE PRIMĂVARĂ SI CUIBARITULUI. [THE BEHAVIOR OF TREE SPARROWS *(PASSER MONTANUS* L.) DURING SPRING MATING AND NEST BUILDING.] *An. Stiint. Univ. "Al. I. Cuza" Iasi Sect. II (A) Biol.* 15(1): 139-146, illus. 1969. [From Biol. Abstr. 52(6), 1971. In Romanian with French summ.] *WR 142: 63*
[Univ. "Al. I. Cuza", Iasi, Romania.]

Johns, Frederick Louis. HABITAT EXPLOITATION BY FOUR SPECIES OF SPARROWS IN ECOTONES IN WINTER. *Ph.D. thesis, N.C. State Univ.* 60 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 63*
Each of the four species (song sparrow, white-throated sparrow, field sparrow, and slate-colored junco) apparently forages in a sufficiently distinct habitat niche so that, even though active to some extent in all vegetation zones, these species are able to coexist in the old field-to-woods ecotonal habitat in winter.

Kendeigh, S. Charles, John E. Kontogiannis, Aldona Mazac, and Roland R. Roth. ENVIRONMENTAL REGULATION OF FOOD INTAKE BY BIRDS. *Comp. Biochem. Physiol.* 31(6): 941-957, illus. 1969. [From Biol. Abstr. 52(9), 1971.] *WR 142: 63*
[Univ. Ill., Urbana.]

Milligan, Marilyn M., and Jared Verner. INTER-POPULATIONAL SONG DIALECT DISCRIMINATION IN THE WHITE-CROWNED SPARROW. *Condor* 73(2): 208-213, 5 figs. Summer 1971. *WR 142: 63*
[P.O. Box 41, Jenner, Calif.] Courtesy/ Paul A. Stewart.

Morton, Eugene Siller. ECOLOGICAL SOURCES OF SELECTION ON AVIAN SOUNDS. *Ph.D. thesis, Yale Univ.* 178 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 63*
This study is an analysis of the acoustic properties of forest, edge, and grassland habitats in Panama that may be sources of selection of avian sounds used in long distance communication. The acoustic analysis consisted of sound propagation tests and ambient noise measurements. The bird sounds in each habitat were analyzed to find the emphasized frequency, the frequency range, sound type (whether modulated or pure tone-like), and the initial signal amplitude.

Oliger, T. I. [TERRITORIAL BEHAVIOR OF CHAFFINCHES.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(1): 128-132, illus. 1970. [From Biol. Abstr. 52 (10), 1971. In Russian with English summ.] *WR 142: 64*

Smyth, Michael, and Harry N. Coulombe. NOTES ON THE USE OF DESERT SPRINGS BY BIRDS IN CALIFORNIA. *Condor* 73(2): 240-243, 1 fig. Summer 1971. *WR 142: 64*
[Univ. Adelaide, Adelaide, South Australia.] Summary: At two desert waterholes in Riverside County, California, several species of resident birds were not seen to drink at air temperatures up to 40°C. These were all insectivorous, carnivorous, or fructivorous. Some insectivorous, carnivorous, or fructivorous birds did drink occasionally. All granivorous birds drank regularly. Mourning Doves, which drink by sucking, must lower their heads for longer intervals than other birds; this perhaps makes them vulnerable to predators and explains their great wariness at water. Most birds, if they drink, do so first at mid-morning, probably after they have fed. A method for estimating water consumption in the field is outlined. Very few if any desert birds normally bathe in water. The osmotic concentration of water from several desert springs was low, but water from one spring was nearly isosmotic with birds' blood.--Courtesy/ Paul A. Stewart.

Snow, D. W. AN ANALYSIS OF BREEDING SUCCESS IN THE BLACKBIRD, *TURDUS MERULA*. *Ardea* 57(4): 163-171, illus. 1969. [From Biol. Abstr. 52(9), 1971. In English with Dutch summ.] *WR 142: 64*
[British Mus. (Natur. Hist.), London, England.]

Spencer, Robert. REED WARBLER SINGING IN MIST-NET. *British Birds* 64(1): 34-35. Jan. 1971. *WR 142: 64*
[British Trust Ornithol., Beech Grove, Tring, Hertfordshire, England.] *"Acrocephalus scirpaceus."*

Winkel, Wolfgang. EXPERIMENTELLE UNTERSUCHUNGEN ZUR BRUTBIOLOGIE VON KOHL- UND BLAUMEISE *(PARUS MAJOR* UND *P. CAERULUS)*. UEBER LEGEPERIODE, EIGROESSE, BRUTDAUER, NESTLINGSENTWICKLUNG UND REAKTION BEI VERAENDERUNG DER EIZAHL. [EXPERIMENTAL INVESTIGATIONS ON THE BREEDING BIOLOGY OF THE GREAT TITS AND BLUE TITS *(PARUS MAJOR* AND *P. CAERULEUS)*. ON THE LAYING PERIOD, SIZE OF THE EGG, LENGTH OF BROODING, DEVELOPMENT OF THE NESTLING AND REACTION IN CHANGES OF THE NUMBER OF EGGS.] *J. Ornithol.* 111(2): 154-174, illus. 1970. [From Biol. Abstr. 52(6), 1971. In German.] *WR 142: 64*
[Inst. Vogelforsch. "Vogelwarte" Helgoland, Brunswick, Germany.]

Yamagishi, S., T. Nakamura, S. Suyama, K. Iijima, H. Ushiyama, and T. Kagawa. [A COMPARATIVE STUDY ON THE WINTERING ECOLOGY OF FIVE SPECIES OF *EMBERIZA*.] *Misc. Rep. Yamashina's Inst. Ornithol.* 5(6): 585-601, illus. 1969. [From Biol. Abstr. 52(10), 1971. In Japanese with English summ.] *WR 142: 64*
[Shinshu Univ., Nagano, Japan.]

Zahavi, Amotz. THE SOCIAL BEHAVIOUR OF THE WHITE WAGTAIL *MOTACILLA ALBA ALBA* WINTERING IN ISRAEL. *Ibis* 113(2): 203-211, 1 fig. Apr. 1971. *WR 142: 64*
[Tel-Aviv Univ., Tel-Aviv, Israel.]

BIRDS--MIGRATION & BANDING REPORTS

Able, Kenneth P. A RADAR STUDY OF THE ALTITUDE OF NOCTURNAL PASSERINE MIGRATION. *Bird-Banding* 41(4): 282-290, 4 figs. Oct. 1970. *WR 142: 64*
[Univ. Ga., Athens.] More than 75% of the birds in fall migration flew below 3,000 feet altitude, and more than 90% flew below 5,000 feet. Small numbers of passerine-type echoes were recorded up to 10,980 feet. Birds flew highest early in the night. Mean altitude was negatively correlated with wind speed.--Courtesy/ Paul A. Stewart.

Bassini, Ettore. CATTURE DEL VERDONE *(CHLORIS CHLORIS* L.*)* IN IMPIANTI DI UCCELLAGIONE IN ITALIA. [CAPTURE OF GREENFINCH AT BIRD-CATCHING INSTALLATIONS IN ITALY.] *Ric. Zool. Appl. Caccia* 49. 91 p., illus. 1971. In Italian with French, German, and English summ. *WR 142: 65*
Analysis of yearly, monthly, and daily capture data for several established banding stations in Italy.

Eriksson, Kalervo. MASSENRUECKZUG DER ROTDROSSEL *(TURDUS ILIACUS)* IM APRIL 1959 AN DER FINNISCHEN SUEDKUESTE IN BEZIEHUNG ZUR WETTERLAGE. [THE MASSIVE REVERSE MIGRATION OF THE REDWING, *TURDUS ILIACUS*, IN THE SPRING 1959 IN RELATION TO WEATHER CONDITIONS.] *Vogelwarte* 25(3): 193-203, illus. 1970. [From Biol. Abstr. 52(7), 1971. In German with English summ.] *WR 142: 65*
[Box 10350, Helsinki, Finland.]

Forsyth, Bill J., and Douglas James. SPRINGTIME MOVEMENTS OF TRANSIENT NOCTURNALLY MIGRATING LANDBIRDS IN THE GULF COASTAL BEND REGION OF TEXAS. *Condor* 73(2): 193-207, 4 figs. Summer 1971. *WR 142: 65*
[Ind. Univ. Southeast, Jeffersonville.] Courtesy/ Paul A. Stewart.

Kloek, Gerrit. THE MIGRATORY STATUS OF THE CARDINAL, *RICHMONDENA CARDINALIS CARDINALIS*, IN THE VICINITY OF CARBONDALE, ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(2): 160-166, illus. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 65*
[Southern Ill. Univ., Carbondale.]

Mattox, William G. BIRD-BANDING IN GREENLAND. *Arctic* 23(4): 217-228, illus. 1970. [From Biol. Abstr. 52(11), 1971. In English with French and Russian summ.] *WR 142: 65*

Myhrberg, Harry E. RINGMARKNINGSVERKSAMHETEN INOM LUVRE-PROJEKTET 1963-1969. [THE RINGING ACTIVITY AT ANMARNAS IN 1963-1969.] *Vår Fågelvärld* 28(3/4): 245-248. 1969. [From Biol. Abstr. 52(10), 1971. In Swedish with English summ.] *WR 142: 65*
[Zool. Inst., Lund, Sweden.]

Nisbet, I. C. T. BANDING RECOVERIES OF THE BLACKPOLL WARBLER. *Bird-Banding* 41(4): 279-281. Oct. 1970. *WR 142: 65*
[Mass. Audubon Soc., Lincoln.] Two recoveries of banded blackpoll warblers *(Dendroica striata)* indicated that the fall migration involved short-distance movements in a direction between south and southwest.--Courtesy/ Paul A. Stewart.

Purchase, D. FIFTEENTH ANNUAL REPORT OF THE AUSTRALIAN BIRD-BANDING SCHEME, JULY 1968 TO JUNE 1969. *Australia Commonw. Sci. Ind. Res. Organ. Div. Wildl. Tech. Pap.* 21: 3-79. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 65*
[Div. Wildl. Res., CSIRO, Canberra, Australia.]

Ralph, C. John. AN AGE DIFFERENTIAL OF MIGRANTS IN COASTAL CALIFORNIA. *Condor* 73(2): 243-246. Summer 1971. *WR 142: 65*
[Johns Hopkins Univ., Baltimore, Md.] Summary: Age composition differing significantly from the normal was demonstrated for three species of autumnal, long distance nocturnal passerine migrants on the central California coast. Approximately 95% of the individuals captured were young birds. Of the various explanations proposed to explain this phenomenon, the most likely interpretation is that the immatures along the coast are individuals who possess genetically-based navigational tendencies of a non-adaptive sort. Not only are such birds removed from their normal migratory route, but they are also exposed to the hazards of an overwater flight.--Courtesy/ Paul A. Stewart.

Spencer, Robert. REPORT ON BIRD-RINGING FOR 1969. *British Birds* 64(4): 137-186, 1 fig. Apr. 1971. *WR 142: 65*
[British Trust Ornithol., Beech Grove, Tring, Hertfordshire, England.]

Walentinus, Hans-Georg. NAGRA SVENSKA FÅGELARTERS VÅRFLYTTNING 1957-1961. [SPRING MIGRATION OF SOME SWEDISH BIRDS IN 1957-1961.] *Vår Fågelvärld* 29(3): 160-178, illus. 1970. [From Biol. Abstr. 52(9), 1971. In Swedish.] *WR 142: 66*
[Univ. Stockholm, Stockholm, Sweden.]

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Brooks, William S. SONGBIRD COMMUNITIES--COMPARISON OF SEDGE-FORB MEADOW & WILLOW SHRUB AREAS. *Passenger Pigeon* 33(1): 39-45. Spring 1971. *WR 142: 66*
[Ripon Coll., Ripon, Wis.] Comparisons are made of estimates of bird densities made during 1959 and 1969.

Brosset, A. LOCALISATION ÉCOLOGIQUE DES OISEAUX MIGRATEURS DANS LA FORÊT ÉQUATORIALE DU GABON. [ECOLOGICAL LOCALIZATION OF AVIAN MIGRANTS IN THE GABON EQUATORIAL FORESTS.] *Biol. Gabonica* 4(3): 211-226. 1968. [From Bird-Banding 41(4), 1970. In French with English summ.] *WR 142: 66*

Brosset, A. LA VIE SOCIALE DES OISEAUX DANS UNE FORÊT ÉQUATORIALE DU GABON. [BIRD COMMUNITIES IN AN EQUATORIAL FOREST OF GABON.] *Biol. Gabonica* 5(1): 29-69. 1969. [From Bird-Banding 41(4), 1970. In French with English summ.] *WR 142: 66*

Eckert, J. BIRDS OF THE FRANKLIN ISLANDS AND EYRE ISLAND, SOUTH AUSTRALIA. *Emu* 71(2): 61-64, 1 fig. Apr. 1971. *WR 142: 66*

Farina, Almo. OSSERVAZIONI SULL'AVIFAUNA DELL'ALTA LUNIGIANA ORIENTALE. [OBSERVATIONS OF THE AVIFAUNA OF EAST LUNIGIANA.] *Ric. Zool. Appl. Caccia* 50. 50 p., 12 figs. + 1 single-fold map bound in. 1971. In Italian with French, German, and English summ. *WR 142: 66*

Feriane, Oskar. MIGRÚJUCE VTÁCTVO NA PODVIHORLATSKEJ VODNEJ NÁDRŽI. [MIGRATORY BIRDS FREQUENTING THE ARTIFICIAL LAKE AT THE BASE OF THE VIHORLAT MOUNTAINS IN EASTERN SLOVAKIA.] *Biologia* (Bratislava) 24(11): 813-838, illus. 1969. [From Biol. Abstr. 52(4), 1971. In Czech with German and Russian summ.] *WR 142: 66*
[Komenského Univ., Bratislava, Czechoslovakia.]

Feriancová-Masarova, Zora, and Stefan Dontschev. GEGENUBERSTELLUNG DER ORNITHOFAUNA DER WESTKARPATEN (SLOWAKEI) UND DER WESTLICHEN STARA PLANINA (BULGARIEN) (II). [ORNITHOFAUNA OF THE WEST CARPATHIANS (SLOVAKIA) COMPARED WITH THAT OF WESTERN OLD PLATEAU (BULGARIA) II.] *Biologia* (Bratislava) 25(2): 85-100, illus. 1970. [From Biol. Abstr. 52(3), 1971. In German with Czech and English summ.] *WR 142: 66*
[Bulgarian Acad. Sci., Sophia, Bulgaria.]

Field, Nancy H. USE OF AN EASTERN SOUTH DAKOTA SHELTERBELT BY NESTING BIRDS. *S. Dak. Bird Notes* 23(2): 43-45, 36, 2 figs. June 1971. *WR 142: 66*
[Bellevue, Wash.]

Flack, J. A. Douglas. BIRD POPULATIONS OF ASPEN FORESTS IN WESTERN NORTH AMERICA. *Ph.D. thesis, Univ. Wis.* 257 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 66*
Aspen *(Populus tremuloides)* often occurs in essentially pure stands at mid-altitudes throughout a large portion of the western mountains of the United States, and at lower elevations in the Canadian parkland and mixed boreal forest. Quantitative measurements of the breeding bird populations were made in 41 forests between Arizona and Wyoming, and from southwestern Alberta to Manitoba. Structure of the forest vegetation was estimated in each area. The number of species of birds and relative abundance was found to decrease in a similar pattern in the montane and parkland regions as tree density increased or average tree diameter decreased. Total numbers of breeding species or individuals were usually highest in parkland forests.--From abstr.

Geale, John. BIRDS OF RESOLUTE, CORNWALLIS ISLAND, N.W.T. *Canadian Field-Natur.* 85(1): 53-59. Jan.-Mar. 1971. *WR 142: 67*
[Box 156, Longview, Alberta, Canada.] Observations of 35 spp., eight of which were not previously recorded by ornithologists in two previously published accounts of the area.

Gilliard, E. Thomas, and Mary Le Croy. NOTES ON BIRDS FROM THE TAMRAU MOUNTAINS, NEW GUINEA. *Amer. Mus. Nov.* 2420: 1-28, illus. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 67*
[Le Croy: Amer. Mus. Natur. Hist., New York, N.Y.]

Golovkin, A. N., and A. A. Georgiev. [BIRD COLONY ON THE TYULEN ISLAND (FAR EAST).] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(2): 53-59, illus. 1970. [From Biol. Abstr. 52(2), 1971. In Russian with English summ.] *WR 142: 67*

Gromadzki, Maciej. BREEDING COMMUNITIES OF BIRDS IN MID-FIELD AFFORESTED AREAS. *Ekol. Pol. Ser. A* 18(14): 307-350, illus. 1970. [From Biol. Abstr. 52 (11), 1971. In English with Polish summ.] *WR 142: 67*
[Turew, Poland.]

Hubbard, John P. THE SUMMER BIRDS OF THE GILA VALLEY, NEW MEXICO. *Nemouria, Occas. Pap. Del. Mus. Natur. Hist.* no. 2. 35 p., 12 figs. 15 May 1971. *WR 142: 67*
Annotated list of 143 spp. with a description of habitats.

Johnson, Ned K. THE AFFINITIES OF THE BOREAL AVIFAUNA OF THE WARNER MOUNTAINS, CALIFORNIA. *Biol. Soc. Nev. Occas. Pap.* 22: 1-11. 1970. [From Biol. Abstr. 52(3), 1971.] *WR 142: 67*
[Univ. Calif., Berkeley.]

Keith, Stuart, Arthur Twomey, Herbert Friedmann, and John Williams. THE AVIFAUNA OF THE IMPENETRABLE FOREST, UGANDA. *Amer. Mus. Nov.* 2389. p. 1-41, illus. 1969. [From Biol. Abstr. 52(9), 1971.] *WR 142: 67*
[Amer. Mus. Natur. Hist., New York, N.Y.]

Lebreton, Philippe, and Bernard Chabert. COMPTE RENDU ORNITHOLOGIQUE ANNUEL DE L'AUTOMNE 1967 A L'ÉTÉ 1968 DANS LA REGION RHONE-ALPES. [ANNUAL ORNITHOLOGIC REPORT FROM AUTUMN 1967 TO SUMMER 1968 IN THE RHONE-ALP REGION.] *Bull. Mens. Soc. Linn. Lyon* 38(7): 222-242, illus. 1969. [From Biol. Abstr. 52(7), 1971. In French.] *WR 142: 67*

L'Eplattenier, P. A., J. Mathey, J. C. Pedroli, and A. Schertenlieb. ETUDE D'UNE AVIFAUNE NICHEUSE DANS UNE TOURBIÈRE DU HAUT-JURA. [STUDY OF A NEST-BUILDING AVIFAUNA IN A PEAT BOG OF THE UPPER JURA MOUNTAINS (SWITZERLAND).] *Nos Oiseaux Bull. Soc. Romande Etude Protect. Oiseaux* 30(328): 185-191, illus. 1970. [From Biol. Abstr. 52(4), 1971. In French.] *WR 142: 67*
[Petit-Catechisme 3, Neuchatel, Switzerland.]

Lokemoen, J. T. USE OF STOCK PONDS BY BREEDING WATERFOWL AND OTHER WATER BIRDS IN STANLEY COUNTY, SOUTH DAKOTA. *S. Dak. Bird Notes* 23(2): 34-36. June 1971. *WR 142: 67*

Mayaud, Noël. ADDITIONS ET CONTRIBUTION A L'AVIFAUNE DU NORD-OUEST DE L'AFRIQUE. [ADDITIONS AND CONTRIBUTIONS TO THE AVIFAUNA OF NORTH-WEST AFRICA.] *Alauda* 38(1): 27-43. 1970. [From Biol. Abstr. 52(2), 1971. In French.] *WR 142: 67*

Mustakallio, Pekka. VASKIJAEVEN LUONNONPUISTON LINNUSTOSTA. [THE BIRD FAUNA IN VASKIJARVI NATURAL PARK, SOUTHERN FINLAND.] *Ornis Fenn.* 47(3): 136-139. [From Biol. Abstr. 52(11), 1971. In Finnish with English summ.] *WR 142: 67*

Neruchev, V. V. [SOME ECOLOGICAL-GEOGRAPHIC FEATURES OF THE AVIFAUNAS IN THE KARAKUM DESERT IN THE VICINITY OF THE BLACK SEA.] *Uch. Zap. Gor'k. Gos. Pedagog. Inst.* 99. p. 84-90. 1969. [From Biol. Abstr. 52(12), 1971, from Referat. Zh., Biol., 1970, no. 4I370. Transl. of Russian abstr.] *WR 142: 68*

Nielsen, Holger Garner. FUGLEFAUNAEN VED OM KLOSTER. ORNITHOLOGISKE IAGTTAGELSER I AMRADET MOSSO VEST-OM-GUDENSO. [BIRDS AT OM MONASTERY. ORNITHOLOGICAL OBSERVATIONS IN THE AREA OF MOSSO WEST-OM-GUDENSO (DENMARK).] *Flora Fauna* 76(3): 83-90, illus. 1970. [From Biol. Abstr. 52(9), 1971. In Danish with English summ.] *WR 142: 68*
[Kloster Mus., Skanderborg, Denmark.]

Praz, Jean-Claude. APERCU DE LA FAUNE DU MARAIS DE GRÔNE, EN VALAIS. [SURVEY OF THE FAUNA OF THE GRONE MARSH IN THE VALAIS REGION (SWITZERLAND).] *Nos Oiseaux Bull. Soc. Romande Etude Protect. Oiseaux* 30(329/330): 201-214, illus. 1970. [From Biol. Abstr. 52(2), 1971. In French.] *WR 142: 68*
[Rue Creusets 53, Sion, France.]

Recher, H. F., D. G. Thomas, and D. R. Milledge. CENSUS OF DRY SCLEROPHYLL. *Emu* 71(1): 40-43. Jan. 1971. *WR 142: 68*
A bird census is reported and the results are discussed with the possible effects of woodchip operations on wildlife.

Ricklefs, R. E. STAGE OF TAXON CYCLE AND DISTRIBUTION OF BIRDS ON JAMAICA, GREATER ANTILLES. *Evolution* 24(2): 475-477. [1970.] [From Bird-Banding 42(1), 1971.] *WR 142: 68*

Schwartz, Albert. LAND BIRDS OF ISLA SAONA, REPUBLICA DOMINICANA. *Quart. J. Fla. Acad. Sci.* 32(4): 291-306, illus. 1969. [From Biol. Abstr. 52(12), 1971.] *WR 142: 68*
[Miami-Dade Junior Coll., Miami, Fla.] Annotated list.

Sosin, V., V. Ryzhanovskii, and Y. Novozhenov. [A STUDY OF AVIAN AND INVERTEBRATE TROPHIC RELATIONSHIPS IN BIOGEOCENOSES OF THE TUNDRA.] *Ekologiya* 1970(2): 55-65. 1970. [From Bird-Banding 42(1), 1971. In Russian.] *WR 142: 68*

Sturan, Dieter. BEITRAG ZUR AVIFAUNA DES MADEIRA ARCHIPELS. [DATA ON THE AVIFAUNA OF MADEIRA.] *Bol. Mus. Munic. Funchal.* 23: 36-45. 1969. [From Biol. Abstr. 52(6), 1971. In German.] *WR 142: 68*
[Biol. Bundesanstalt, Munster, Westfalen, Germany.]

Von Westernhagen, Wolfgang. UEBER DIE BRUTVOEGEL DER BANC D'ARGUIN (MAURETANIEN). [ON THE BREEDING BIRDS OF THE BANC D'ARGUIN (MAURETANIA).] *J. Ornithol.* 111(2): 206-226. 1970. [From Biol. Abstr. 52(6), 1971. In German with English summ.] *WR 142: 68*
[Preetz, Germany.]

Wauer, Roland H. ECOLOGICAL DISTRIBUTION OF BIRDS OF THE CHISOS MOUNTAINS, TEXAS. *Southwestern Natur.* 16(1): 1-29, 10 figs. 23 July 1971. *WR 142: 68*
[Big Bend Nat. Park, Texas.] Abstract: Six distinct plant associations were identified by extensive observations of preferred habitats utilized by breeding birds of the Chisos Mountains, Texas. Thirty species were found to nest within the Arroyo-Mesquite-Acacia Association, thirteen species in the Lechuguilla-Creosotebush-Cactus Association, thirty-two species in the Sotol-Grass Association, forty-two species in the Deciduous Woodland Association, thirty-two species were found to use the Pinyon-Juniper-Oak Association, and twenty-four species were found breeding within the Cypress-Pine-Oak Association. Eighty-one species of birds were found to nest within the Chisos Mountains.

Winterbottom, J. M. THE BIRDS OF THE AUGRABIES FALLS NATIONAL PARK. *Koedoe* no. 13. p. 171-180. 1970. *WR 142: 68*
[Univ. Cape Town, Cape Town, South Africa.] Annotated systematic list.

Diamond, Jared M. ECOLOGICAL CONSEQUENCES OF ISLAND COLONIZATION BY SOUTHWEST PACIFIC BIRDS: II. THE EFFECT OF SPECIES DIVERSITY ON TOTAL POPULATION DENSITY. *Proc. Nat. Acad. Sci. USA* 67(4): 1715-1721, illus. 1970. [From Biol. Abstr. 52 (10), 1971.] *WR 142: 69*
[Univ. Calif. Med. Center, Los Angeles.]

Eriksson, Kalervo. THE INVASION OF *SITTA EUROPAEA ASIATICA* GOULD INTO FENNOSCANDIA IN THE WINTERS OF 1962/63 AND 1963/64. *Ann. Zool. Fenn.* 7(2): 121-140, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 69*
[Box 10350, Helsinki, Finland.]

Flegg, J. J. M. BIRDS IN IRELAND DURING 1966-69. *British Birds* 64(1): 4-19. Jan. 1971. *WR 142: 69*
[British Trust Ornithol., Beech Grove, Tring, Hertfordshire, England.] A discussion and summary of the noteworthy observations made during the four-year period are followed by an annotated list of rarities.

Hoelzinger, J., W. Gatter, B. Kroymann, W. Stauber, and B. Ullrich. UNTERSUCHUNGEN UEBER VERBREITUNG UND BRUTBESTAND EINIGER VOGELARTEN IN BADEN-WUERTTEMBERG. [STUDY OF THE INCREASE AND THE POPULATION OF SOME BIRD SPECIES IN BADEN-WUERTTEMBERG.] *Anz. Ornithol. Ges. Bayern* 9(2): 155-169. 1970. [From Biol. Abstr. 52(6), 1971. In German.] *WR 142: 69*
[Arbeitsgemeinsch. Avifaun. Forsch., Baden-Wuerttemberg, Germany.]

Holmbring, Jan-Ake. FAGLARNA VID SJON ROXEN 1953-1968. [THE BIRDS AT LAKE ROXEN IN 1953-1968.] *Vår Fågelvärld* 29(3): 179-222, illus. 1970. [From Biol. Abstr. 52(9), 1971. In Swedish with English summ.] *WR 142: 69*
[Fänkålsstigen 3, Linkoping, Sweden.]

Koller, Josef. QUANTITATIVE BESTANDSAUFNAHME DER BRUTVOEGEL IM TORFEINFANG BEI DACHAU. [QUANTITATIVE POPULATION SURVEY OF BREEDING BIRDS IN THE PEAT BOGS NEAR DACHAU.] *Anz. Ornithol. Ges. Bayern* 9(2): 150-154, illus. 1970. [From Biol. Abstr. 52(6), 1971. In German.] *WR 142: 69*
[Volkartst. 75, Munich, Germany.]

Krebs, John R. REGULATION OF NUMBERS IN THE GREAT TIT (AVES: PASSERIFORMES). *J. Zool.* 162(3): 317-333, illus. 1970. [From Biol. Abstr. 52(9), 1971.] *WR 142: 69*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Lien, L., E. Östbye, A. Hagen, A. Klemetsen, and H. J. Skar. QUANTITATIVE BIRD SURVEYS IN HIGH MOUNTAIN HABITATS, FINSE, SOUTH NORWAY, 1967-68. *Nytt Mag. Zool.* 18(2): 245-251, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 69*
[Univ. Oslo, Oslo, Norway.]

Svensson, Sören, editor. BIRD CENSUS WORK AND ENVIRONMENTAL MONITORING / SYMPOSIUM / ÄMMARNÄS, 27-29 JUNE 1969. *Bull. Ecol. Res. Committee* no. 9. p. 5-9, illus. 1970. Available from Swedish Natural Science Research Council, Box 23136, S-104 35 Stockholm, Sweden. *WR 142: 69*
The following papers are included: *Bird census work and environmental monitoring*, Sören Svensson; *Danish bird census work*, Ole Have Jørgensen; *The Common Birds Census as a device for monitoring population levels*, Kenneth Williamson; *Report on recent bird census work in France*, L. J. Yeatman; *Progress in bird census work in Germany*, Hans Oelke; *Short report on bird census work in the Netherlands*, Arend Tinmerman; *Bird census work in Sweden*, Sören Svensson; *Progress report on the North American Breeding Bird Survey*, Chandler S. Robbins and Willet T. Van Velzen; *A Danish farmland census*, Ole Have Jørgensen; *Bird species densities derived from study area investigations and line transects*, Anders Enemar and Bengt Sjöstrand; *Comparison of two methods for monitoring changes in winter populations of songbirds*, Chandler S. Robbins; and *Winter bird censuses of an oak-pine forest in Northwest Germany, a methodological study*, Hans Oelke, Jürgen Schierer, and Werner Winkelmann.

Wallace, Gary Oren. AN EVALUATION OF THE ROADSIDE COUNT TECHNIQUE UTILIZED IN THE BREEDING BIRD SURVEY. *Ph.D. thesis, Univ. Tenn.* 210 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 70*

BIRDS--ECONOMICS, CONTROL, MORTALITY

Baker, R. H. BIRD PREDATION AS A SELECTIVE PRESSURE ON THE IMMATURE STAGES OF THE CABBAGE BUTTERFLIES, *PIERIS RAPAE* AND *P. BRASSICAE*. *J. Zool.* (London) 162(1): 43-59, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 70*
[Univ. Newcastle-upon-Tyne, Newcastle, England.]

Caithness, T. A. RESEARCH ON BIRD HAZARDS TO AIRCRAFT IN NEW ZEALAND. *New Zealand Wildl. Serv. Wildl. Publ.* no. 121. 7 p. Undated. In English with French summ. *WR 142: 70*
[New Zealand Wildl. Serv., Wellington, New Zealand.] In late 1964 research techniques and preventive measures were implemented on 12 airfields. Several methods have proved effective in lessening bird/aircraft incidents, including insecticide treatments, Polystyrene models of crucified gulls to discourage roosting and nesting, poisoning breeding colonies, and encouraging better placement of rubbish dumps and effluent outfalls.

Greenwood, J. J. D., R. J. Donally, C. J. Feare, Nancy J. Gordon, and George Waterston. A MASSIVE WRECK OF OILED BIRDS: NORTHEAST BRITAIN, WINTER 1970. *Scottish Birds* 6(5): 235-250, 2 figs. Spring 1971. *WR 142: 70*
[Univ. Dundee, Dundee, Scotland.] Counts of beached birds in northeast England and east Scotland during the period 1 January to 15 February, 1970, have been collated. Approximately 12,400 of the birds were killed by oil. The oil had apparently been discharged in the North Sea in late December, and had drifted up the coast of England and Scotland.--From summ.

Kennedy, R. J. DIRECT EFFECTS OF RAIN ON BIRDS: A REVIEW. *British Birds* 63(10): 401-414, 1 fig. 1970. *WR 142: 70*
[12 Deepfield Rd., Liverpool 15, England.] The most important direct effect of rain on birds in general is wetting of the plumage and the possibility of death resulting from hypothermia, but it is probably not a particularly significant mortality factor in most cases, except at the chick stage. A wide variety of birds take shelter, or rest immobile, in rain; some cover their young; and flight appears to be inhibited. These effects of rain await detailed study, and much of the information available at present is vague and anecdotal.--From summ.

Lavery, H. J. COLLISIONS BETWEEN AIRCRAFT AND BIRDS AT TOWNSVILLE, QUEENSLAND. *Queensland J. Agr. Anim. Sci.* 26(3): 447-455, illus. 1969. [From Biol. Abstr. 52(1), 1971.] *WR 142: 70*

Lyon, David L., and Christine Chadek. EXPLOITATION OF NECTAR RESOURCES BY HUMMINGBIRDS, BEES *(BOMBUS)*, AND *DIGLOSSA BARITULA* AND ITS ROLE IN THE EVOLUTION OF *PENSTEMON KUNTHII*. *Condor* 73(2): 246-248, 1 fig. Summer 1971. *WR 142: 70*
[Cornell Coll., Mount Vernon, Iowa.] Courtesy/ Paul A. Stewart.

Mustafaev, G. T., E. M. Chilikina, and Sh. A. Yagubov. [THE EFFECT OF THE EXTREMELY SEVERE WINTER OF 1969 ON THE OVERWINTERING OF BIRDS IN AZERBAIDZHAN.] *Uch. Zap. Azerb. Univ. Ser. Biol. Nauk.* 3: 60-69. 1969. [From Biol. Abstr. 52 (8), 1971, from Referat. Zh., Biol., 1970, no. 7I414. In Russian.] *WR 142: 70*

Waldbauer, G. P., J. G. Sternburg, W. G. George, and A. G. Scarbrough. HAIRY AND DOWNY WOODPECKER ATTACKS ON COCOONS OF URBAN *HYALOPHORA CECROPIA* AND OTHER SATURNIIDS (LEPIDOPTERA). *Ann. Entomol. Soc. Amer.* 63(5): 1366-1369, illus. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 70*
[Univ. Ill., Urbana.]

Bennett, Gordon F. GALLINACEOUS SPECIES OF *PLASMODIUM*. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 27. Aug. 1970. Abstract only. *WR 142: 71*
[Memorial Univ. Newfoundland, St. John's, Newfoundland, Canada.]

Blankespoor, Harvey Dale. HOST-PARASITE RELATIONSHIPS OF AN AVIAN TREMATODE, *PLAGIORCHIS NOBLEI* PARK, 1936. *Ph.D. thesis, Iowa State Univ.* 189 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 71*
Plagiorchis noblei, a common bird trematode occurs in nature in at least 12 spp. of avian hosts representing two orders (Passeriformes and Charadriiformes) and five families (Corvidae, Hirundinidae, Icteridae, Laridae and Tyrannidae). Of 235 birds examined, 44% were infected, including 87% of all yellow-headed blackbirds *(Xanthocephalus xanthocephalus)* and 88% of all purple martins *(Progne subis)*.

Boyd, David Armitage IV. HOST-PARASITE INTERACTION BETWEEN *HISTOMONAS MELEAGRIDIS* AND *HETERAKIS GALLINARUM* IN BOBWHITE QUAIL AND PHEASANTS. *Ph.D. thesis, Kans. State Univ.* 248 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 71*
Bobwhite quail were found to be completely refractory to infection with *Histomonas meleagridis* cultured *in vitro*. When they were given *Heterakis gallinarum* eggs, which transovarially transmit *Histomonas*, several birds contracted histomoniasis. Ring-necked pheasants were susceptible to *Histomonas* cultured *in vitro*.

Corradetti, Augusto. *PLASMODIUM* SPECIES OF WILD BIRDS IN ITALY. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 2): 412-413. Aug. 1970. Abstract only. *WR 142: 71*
[Istituto Superiore Sanità, Rome, Italy.]

Enright, Christine A. A REVIEW OF RESEARCH ON TYPE C BOTULISM AMONG WATERBIRDS. *Bur. Sport Fisheries & Wildl.* and *Colo. Coop. Wildl. Res. Unit.* iii + 22 p. Jan. 1971. *WR 142: 71*
[Colo. State Univ., Fort Collins.] After investigating a variety of possible alternatives, biologists determined in 1934 that "duck sickness" was the result of ingestion of the toxin of *Clostridium botulinum* type C. Subsequent studies of ecological manifestations of botulism outbreaks and bacterial requirements led to an acceptance of a microenvironmental concept of toxin production which hypothesizes that all requisites for bacterial metabolism are available in particulate animal matter, notably invertebrate carcasses. Invertebrates associated with areas of outbreak are generally believed to provide the mode of transmission for the bacterium and its toxin to waterbirds. These conclusions are based largely on laboratory experimentation and have yet to be verified under field conditions. Methods for detection, treatment and control of avian botulism are still largely post factum and temporary in nature. Effective, long-term controls are yet to be determined.--From abstr.

Iskova, N. I. [DEPENDENCE OF TREMATODE FAUNA OF WATER-BOG BIRDS ON NUTRITION.] *Vestn. Zool.* 4(3): 62-67. 1970. [From Biol. Abstr. 52(5), 1971. In Russian with English summ.] *WR 142: 71*
[Inst. Zool., Acad. Sci. Ukrainian SSR, Kiev, USSR.]

Jablonska, Joanna. THE OCCURRENCE OF ANALGESOIDEA MITES (ACARINA) ON TURDID BIRDS (TURDIDAE) DURING THE SPRING AND AUTUMN MIGRATION OF THEIR HOSTS, IN POLAND. *Acta Parasitol. Pol.* 18(42-50): 521-550, illus. 1970. [From Biol. Abstr. 52(12), 1971. In English with Polish summ.] *WR 142: 71*
[Dep. Parasitol., Polish Acad. Sci., Warsaw, Poland.]

Jochen, Robert F. BLOOD PARASITES OF BIRDS TRAPPED IN THE NEW JERSEY COASTAL REGION. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 2): 431. Aug. 1970. Abstract only. *WR 142: 72*
[N.J. Bur. Vet. Public Health, Plainfield.]

Karpovich, V. N. [PARASITIC CHARACTERISTICS OF *CERATIXODES PUTUS* PICK.-CAMB. ON BIRDS.] *Parazitologiya* 4(4): 345-351, illus. 1970. [From Biol. Abstr. 52(4), 1971. In Russian with English summ.] *WR 142: 72*

Kellogg, Forest E., Gary L. Doster, and Joyce K. Johnson. DISEASES AND PARASITES ENCOUNTERED IN PEN-RAISED INDIAN RED JUNGLEFOWL. *J. Wildl. Dis.* 7(3): 186-187. July 1971. *WR 142: 72*
[Univ. Ga., Athens.] Junglefowl appear to be susceptible to most diseases and parasites of domestic chickens.--From abstr.

Luetghen, W. SALMONELLA INFIZIERTE STUBENVOEGEL ALS POTENTIELLE QUELLE MENSCHLICHER INFEKTIONEN. [DOMESTIC BIRDS INFECTED WITH SALMONELLA AS A POTENTIAL SOURCE OF HUMAN INFECTIONS.] *Arch. Hyg. Bakteriol.* 154(2): 167-170. 1970. [From Biol. Abstr. 52(7), 1971. In German with French, Spanish and English summ.] *WR 142: 72*
[Deutchordenstr. 48, Frankfurt/Main, Germany.]

Roslien, David J., and Arnold O. Haugen. BLOOD PARASITES FOUND IN SOME IOWA GAME BIRDS. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 291. Aug. 1970. Abstract only. *WR 142: 72*
[Luther Coll., Decorah, Iowa.]

Schmidt, Gerald D., and Robert E. Kuntz. NEMATODE PARASITES OF OCEANICA. XIII. SUBULURIDAE, THELAZIIDAE AND ASCARIDIIDAE OF BIRDS. *Parasitology* 63(1): 91-99, 23 figs. Aug. 1971. *WR 142: 72*
[Univ. Northern Colo., Greeley.]

Schmidt, Gerald D., and Kenneth A. Neiland. HELMINTH FAUNA OF NICARAGUA. IV. *SACCIUTERINA MATHEVOSSIANI* SP.NOV. (DILEPIDIDAE), AND OTHER CESTODES OF BIRDS. *Parasitology* 62(1): 145-149, 9 figs. Feb. 1971. *WR 142: 72*
[Univ. Northern Colo., Greeley.] Cestodes collected from birds of El Recreo, Zelaya, Nicaragua are reported. *Sacciuterina mathevossiani* sp.nov. from *Rhamphocaenus rufiventris* is the only species in the genus with 32 rostellar hooks, each 22-24 µm long, and with 5-9 testes. *Angularella beema*, from *Iridoprocne albilinea*, is partially redescribed. Also reported are *Dilepis undula*, from *Turdus grayi; Anomotaenia mutabilis*, from *Florida caerulea; Ophiovalipora lintoni*, from *Butorides virescens; Hymenolepeis pellucida*, from *Ramphocelus passerinii* and *Gymnostinops montezuma*; and *Raillietina (R.) maplestonei*, from *Amazona autumnalis*. All are new records for Nicaragua.--From summ.

Stabler, Robert M., and Nancy J. Kitzmiller. HEMATOZOA FROM COLORADO BIRDS. III. PASSERIFORMES. *J. Parasitol.* 56(1): 12-16. Feb. 1970. *WR 142: 72*
[Colo. Coll., Colorado Springs.] Abstract: Hematozoa are reported from 1,361 members of the Passeriformes representing 101 species and 22 families, all from Colorado. Some parasitemia was observed in 693 birds (51%). The parasites and their incidences were: *Plasmodium* (all species), 43 (3%); *Haemoproteus*, 229 (17%); *Leucocytozoon*, 273 (20%); *Trypanosoma*, 401 (29%); Haemogregarines *sensu lato (Hepatozoon* and *Lankesterella)*, 40 (2.9%); microfilaria, 174 (13%). Seventy-one new host-parasite associations were encountered.

Williams, James E., Orrey P. Young, Douglas M. Watts, and Thomas J. Reed. WILD BIRDS AS EASTERN (EEE) AND WESTERN (WEE) EQUINE ENCEPHALITIS SENTINELS. *J. Wildl. Dis.* 7(3): 188-194, 1 fig. July 1971. *WR 142: 73*
[SEATO Med. Res. Lab., APO San Francisco 96346.] Abstract: Six species of wild birds were studied for their suitability as sentinels to detect the transmission of EEE and WEE viruses in the Pocomoke Cypress Swamp, Maryland. Blood specimens from birds were tested for virus and for neutralizing antibodies in tubes of primary hamster kidney cell culture. Virus isolations and serological data from bobwhite quail, white-throated sparrows, red-winged blackbirds and English sparrows indicated that transmission of WEE virus began in late July, 1968, and preceded the onset of EEE virus transmission by several weeks and that transmission of both viruses continued into November. Of the species tested, bobwhite quail and white-throated sparrows survived best. Selection and use of wild birds as sentinels are discussed.

GAME BIRDS--GENERAL

Klemetsen, A. CHECK METHOD CENSUS OF COOT, *FULICA ATRA*, AND MOORHEN, *GALLINULA CHLOROPUS*, IN OSTENSJOVANN, SOUTH NORWAY 1967-1968. *Nytt Mag. Zool.* 18(2): 199-207, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 73*
[Tromsö Mus., Tromsö, Norway.]

QUAIL

Blakeney, Whiteford Carlyle, Jr., and Ralph W. Dimmick. GIZZARD AND INTESTINAL HELMINTHS OF BOBWHITE QUAIL IN TENNESSEE. *J. Wildl. Mgmt.* 35(3): 559-562. July 1971. *WR 142: 73*
[4-E Gadsen St., Charleston, S.C.] Abstract: Our study was conducted on a 4,000-acre area of the Ames Plantation, Fayette County, Grand Junction, Tennessee. One hundred six adult and 34 juvenile bobwhite quail *(Colinus virginianus)* were collected by shooting during the periods March through September 1967 and January 1968 through January 1969. The objectives were to determine the number and species of gizzard and intestinal parasites in each bird, and to determine the relationship between sex, age, and weight of bird, and parasite infection. Two nematodes *(Heterakis bonasae* and *Cheilospirura spinosa)* and two cestodes *(Rhabdometra odiosa* and *Raillietina oesticillus)* were found in quail from the Ames Plantation. Male and female birds did not differ significantly with respect to their parasite burdens. No correlation existed between the helminth parasite burden and the weight and age of juvenile quail, or between the parasite burden and the weight of adult birds.

Harshbarger, Thomas J., and James L. Buckner. QUAIL FOODS IN GEORGIA FLATWOODS. *Ga. Forest Res. Pap.* 68. [1] + 5 p. Apr. 1971. *WR 142: 73*
Seeds comprised 51% of the annual diet with fruits of 4 shrub species contributing 15%. Insects, pine mast, and forage were other important food components.--From abstr.

Lambert, R. Unwin. NOTES ON THE BREEDING AND BEHAVIOUR OF JAPANESE QUAILS *(COTURNIX JAPONICA)*. *Avicultural Magazine* 76(5): 177-179, 2 figs. Sept.-Oct. 1970. *WR 142: 73*
[Reigate, Surrey, England.]

Matyniak, Kenneth A., and Laurence J. Stettner. REVERSAL LEARNING IN BIRDS AS A FUNCTION OF AMOUNT OF OVERTRAINING. *Psychonomic Sci. Sect. Anim. Physiol. Psychol.* 21(5): 308-309. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 73*
[Univ. Sussex, Brighton, Sussex, England.] *"Colinus virginianus."*

Weisbrod, Alan Richard. EXPERIMENTAL INVESTIGATION OF PREFERENCE AND SEARCH IMAGE IN THE QUAIL, *COTURNIX JAPONICA*. *Ph.D. thesis, Cornell Univ.* 122 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 74*
Tests demonstrate that an avian herbivore develops a searching image, and that the concept of a searching image is not limited to the functional response of predators. In short, the searching image can be said to be an ecological expression for a behavioral learning phenomenon in which an animal makes a series of preferential choices among alternative food items as they vary in availability over a period of time.

Woodard, A. E., and W. O. Wilson. BEHAVIORAL PATTERNS ASSOCIATED WITH OVIPOSITION IN JAPANESE QUAIL AND CHICKENS. *J. Interdisciplinary Cycle Res.* 1(2): 173-180, illus. 1970. [From Biol. Abstr. 52(9), 1971.] *WR 142: 74*
[Univ. Calif., Davis.]

PHEASANTS

Ardamatskaya, T. B. [ECOLOGY OF PHEASANTS IN THE BLACK SEA RESERVATION.] *Vestn. Zool.* 4(5): 25-30. 1970. [From Biol. Abstr. 5 (11), 1971. In Russian with English summ.] *WR 142: 74*

Bachant, Joseph P., and others. STATUS OF THE RING-NECKED PHEASANT IN OHIO: A SYMPOSIUM. *Ohio Game Monogr.* no. 4. ii + 41 p., illus. Apr. 1971. *WR 142: 74*
[Ohio Dep. Natur. Resour., Div. Wildl., Ashley.] Includes the following: *History of ring-necked pheasants in Ohio*, Joseph P. Bachant; *Ring-necked pheasant productivity, mortality, and harvest*, Kenneth R. Russell; *Pheasant densities and land management practices in Ohio*, Edward A. Leite; *Population study of the ring-necked pheasant on Kelleys Island, Ohio*, Robert J. Stoll, Jr.; and *The symposium in review*, Charles M. Nixon.

Bailey, K. MALE PHEASANT ACCOMPANYING FEMALE AND BROOD. *British Birds* 64(1): 29. Jan. 1971. *WR 142: 74*
[Univ. Stirling, Stirling, Scotland.] *"Phasianus colchicus."*

Mottl, Stanislav. VALIDITY OF THE BURSA OF FABRICIUS, LENGTH OF SPUR, TAIL, BILL AND THE SIZE OF FACIAL "ROSES" AS AN AGE CRITERION IN THE COMMON PHEASANT, *PHASIANUS COLCHICUS* LINN., IN CZECHOSLOVAKIA. *Zool. Listy* 19(1): 55-69, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 74*
[Czechoslovak Acad. Agr., Uhrineves, Czechoslovakia.]

Rieck, Carroll A., Eugene S. Dziedzic, and Robert G. Jeffrey. A HIGH DENSITY OF PHEASANTS AT SEATTLE, WASHINGTON. *Murrelet* 52(1): 7-9, [1 fig.]. Jan.-Apr. 1971. *WR 142: 74*
Spring population of about 3 birds per acre.

GROUSE, PARTRIDGE, ETC.

Abbott, Ursula K., and Glen C. Christensen. HATCHING AND REARING THE HIMALAYAN SNOW PARTRIDGE IN CAPTIVITY. *J. Wildl. Mgmt.* 35(2): 301-306, 1 fig. Apr. 1971. *WR 142: 74*
[Univ. Calif., Davis.] Abstract: The Himalayan snow partridge *(Tetraogallus h. himalayensis)* has been considered for introduction into the Great Basin ranges of Nevada. The inability to obtain a sufficient number of wild-trapped birds to meet program objectives led to the development of mating, incubation, and rearing procedures aimed at providing a sustained annual supply of birds for release. This species is essentially monogamous, and the best egg production and fertility were obtained in pair matings. A high protein diet was fed the brood stock. Birds 2 years and older were the most efficient breeders. Detailed incubation, hatching and rearing procedures, similar to those used for turkeys, were developed.

Almasan, H. A. BEITRAG ZUR KENNTNIS DER NAHRUNG DES AUERHAHNS *(TETRAO UROGALLUS* L.*)* WAEHREND DER BALZZEIT. [A CONTRIBUTION TO THE KNOWLEDGE OF FOOD OF THE CAPERCAILLIE *(TETRAO UROGALLUS* L.*)* DURING THE MATING SEASON.] *Z. Jagdwiss.* 16(1): 7-13, illus. 1970. [From Biol. Abstr. 52(10), 1971. In German with French and English summ.] *WR 142: 75*

Artmann, Joseph William. SPRING AND SUMMER ECOLOGY OF THE SHARPTAIL GROUSE. *Ph.D. thesis, Univ. Minn.* 152 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 75*
"Pediocoetes phasianellus campestris."

Artmann, Joseph W. CAPTURING SHARP-TAILED GROUSE HENS BY USING TAPED CHICK DISTRESS CALLS. *J. Wildl. Mgmt.* 35(3): 557-559. July 1971. *WR 142: 75*
[Vt. Fish & Game Dep., Rutland.] Abstract: A combination of recorded chick distress calls and mist nets was used to capture five sharp-tailed grouse hens *(Pediocoetes phasianellus campestris)* with chicks from less than 1 day to 6 weeks of age. One hen was captured twice and another three times.

Bergerud, Arthur T. POPULATION DYNAMICS OF THE WILLOW PTARMIGAN *LAGOPUS LAGOPUS ALLENI* L. IN NEWFOUNDLAND 1955 TO 1965. *Oikos* 21(2): 299-325, illus. 1970. [From Biol. Abstr. 52(11), 1971. In English with Russian summ.] *WR 142: 75*
[Univ. Victoria, Victoria, British Columbia, Canada.]

Bergerud, Arthur T. THE PAST ABUNDANCE OF WILLOW PTARMIGAN ON THE AVALON PENINSULA OF NEWFOUNDLAND. *Canadian Field-Natur.* 85(1): 21-23, 3 figs. Jan.-Mar. 1971. *WR 142: 75*
[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: A study of the past abundance of Willow Ptarmigan *(Lagopus lagopus)* on the Avalon Peninsula of Newfoundland was made by searching old newspaper accounts 1843 to 1963. High ptarmigan populations occurred in 1909-10, 1925-26, 1929-31, 1940-41, 1950-51, and 1960-61.

Farris, Allen L. DISTRIBUTION AND ABUNDANCE OF THE GRAY PARTRIDGE IN ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(3): 240-245, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 75*
[West Ill. Univ., Macomb.] *"Perdix perdix."*

Jenkins, David, Adam Watson, and Gordon R. Miller. PRACTICAL RESULTS OF RESEARCH FOR MANAGEMENT OF RED GROUSE *(LAGOPUS LAGOPUS SCOTICUS). Biol. Conserv.* 2(4): 266-272, illus. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 75*
[Nature Conserv., Blackhall, Scotland.]

Kostron, K., and J. Hromas. THE PTERYLOGRAPHY OF THE MATURE PARTRIDGE *PERDIX PERDIX* L. *Folia Morph.* 18: 172-180. 1970. [From Bird-Banding 42(1), 1971.] *WR 142: 75*

Lund, Everett E., and Anne M. Chute. HISTOMONIASIS IN THE CHUKAR PARTRIDGE. *J. Wildl. Mgmt.* 35(2): 307-315. Apr. 1971. *WR 142: 75*
[Natl. Animal Parasite Lab., Beltsville, Md.]

Lüps, P. DIE VERBREITUNG DES STEINHUHNS *ALECTORIS GRAECA SAXATILIS* IN DER SCHWEIZ. [THE DISTRIBUTION OF THE ROCK PARTRIDGE *ALECTORIS GRAECA SAXATILIS* IN SWITZERLAND.] *Ornithol. Beob.* 67(3): 94-101. 1970. [From Biol. Abstr. 52(3), 1971. In German with French summ.] *WR 142: 75*
[Naturhist. Mus., Bern, Switzerland.]

Nechaev, V. A., and I. G. Nikolaev. [*PERDIX DAURICA SUCHKINI* POLJAKOV IN THE PRIMOR'E.] *Byull. Mosk. Obshchest. Ispyt. Prir. Otd. Biol.* 75(3): 40-44, illus. 1970. [From Biol. Abstr. 52(3), 1971. In Russian with English summ.] *WR 142: 75*

Oakleaf, R. J., and J. H. Robertson. FALL FOOD ITEMS UTILIZED BY CHUKARS IN KASHMIR, INDIA. *J. Wildl. Mgmt.* 35(2): 395-397. Apr. 1971. *WR 142: 76*
[Univ. Nev., Reno.] Abstract: The contents of 29 chukar *(Alectoris graeca)* crops collected near Srinagar, Kashmir, were analyzed. Although a variety of food items was present, nearly 65% of the volume consisted of grass seeds. A species of *Eragrostis* made up the greatest percentage. Chukars apparently utilize similar grass and weed seeds, green leaves, and agricultural plants in the United States and India.

Puget, A. *TETRAOGALLUS HIMALAYENSIS HIMALAYENSIS* GRAY EN AFGHANISTAN. [*TETRAOGALLUS HIMALAYENSIS HIMALAYENSIS* GRAY IN AFGHANISTAN.] *Alauda* 38(3): 169-173, illus. 1970. [From Biol. Abstr. 52(12), 1971. In French.] *WR 142: 76*

Pulliainen, Erkki. WINTER NUTRITION OF THE ROCK PTARMIGAN, *LAGOPUS MUTUS* (MONTIN), IN NORTHERN FINLAND. *Ann. Zool. Fenn.* 7(3): 295-302, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 76*
[Univ. Helsinki, Finland.]

Rikkölänen, Pauli. KEVÄISELLÄ LUMENSULATUKSELLA ON KOKOAVA VAIKUTUS METSÄKANALINTUIHIN. [SNOW MELTING IN SPRING TENDS TO ASSEMBLE GROUSE.] *Suomen Riista* 23: 65-71, 2 figs. 1971. In Finnish with English summ. *WR 142: 76*
"Black grouse and willow grouse."

Romanov, A. N. [THE AGE STRUCTURE OF THE CAPERCAILLIE POPULATION OF KIROV OBLAST.] *Sb. Nauch-Tekh. Inform. Vses. Nauch-Issled. Inst. Okhotnich'ego Khoz. Zverovod.* 27. p. 11-16. 1969. [From Biol. Abstr. 52(12), 1971, from Referat. Zh., Biol., 1970, no. 7I428. Transl. of Russian abstr.] *WR 142: 76*

Rusch, Donald Harold. ECOLOGY OF PREDATION AND RUFFED GROUSE POPULATIONS IN CENTRAL ALBERTA. *Ph.D. thesis, Univ. Wis.* 198 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 76*
During 1966-69, there were seven-fold and two-fold increases in the spring numbers of snowshoe hares and ruffed grouse, respectively. Great horned owls responded to these changes in numbers of prey by an increase in numbers from 10 to 18, an increase in the proportion nesting from 20% to 100%, and an increase in the percent biomass snowshoe hare in the diet from 23% to 50%. The proportion of ruffed grouse in the diet decreased each year, from 23% in 1966 to 0% in 1969. In the spring, owls preyed selectively on adult hares and male grouse.

Rusch, Donald H., and Lloyd B. Keith. RUFFED GROUSE-VEGETATION RELATIONSHIPS IN CENTRAL ALBERTA. *J. Wildl. Mgmt.* 35(3): 417-429, 5 figs. July 1971. *WR 142: 76*
[Manitoba Dep. Mines, Resour. & Environ. Mgmt., Winnipeg, Canada.] Abstract: Ruffed grouse *(Bonasa umbellus)* were observed on a 2,560-acre area near Rochester, Alberta, from April 1966 through May 1968. The four major vegetative communities on the area were burn, aspen woods *(Populus tremuloides)*, spruce woods (white spruce, *Picea alba* and black spruce, *P. mariana*), and open bog. Of 135 drumming males, 96% occupied logs in the aspen woods. Vegetation at drumming logs was characterized by a significantly sparser canopy of low shrubs, lower density of saplings, and greater density of trees than at the stations in the aspen woods. The dispersion of drumming males in the aspen woods tended toward regularity, probably because of social intolerance. Ruffed grouse used the aspen woods almost exclusively in all seasons of the year. The proportion of grouse observations recorded there varied from 96% in the spring to 74% in the winter. Ruffed grouse tended to be dispersed throughout the aspen woods in the spring, but were often seen in groups of two to eight in the fall and winter. Although 85% of all grouse observations in all seasons were recorded in the aspen woods, approximately 38% of 105 sites where grouse were apparently killed by predators were located in the spruce woods. Shrub

cover and density at kill sites in the aspen woods were significantly lower than in systematic samples taken elsewhere in the aspen woods. Despite strong selection for drumming sites with suitable vegetation, no correlations were found between any specific or synthetic characteristics of the vegetation at drumming logs and the longevity of resident males. Findings at Rochester are compared with those from other areas.

Sevast'yanov, G. N. [INFORMATION ON THE REPRODUCTION AND DIET OF PARTRIDGES IN THE SUBZONE OF THE INTERMEDIATE TAIGA OF THE KOMI ASSR.] *Tr. Kirov. Sel'skokhoz. Inst.* 21(46): 39-53. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I427. In Russian.] *WR 142: 77*

West, George C., Robert B. Weeden, Laurence Irving, and Leonard J. Peyton. GEOGRAPHIC VARIATION IN BODY SIZE AND WEIGHT OF WILLOW PTARMIGAN. *Arctic* 23(4): 240-253. 1970. [From Biol. Abstr. 52(11), 1971. In English with French and Russian summ.] *WR 142: 77*
[Univ. Alaska, College.] *"Lagopus lagopus."*

TURKEY

Davis, James R. SPRING WEATHER AND WILD TURKEYS. *Ala. Conserv.* 41(1): 6-7, 2 figs. Feb. 1971. *WR 142: 77*
Certain weather conditions, such as dew and cloud cover, were associated with an increase in gobbling activity. Barometric pressure, temperature, and wind direction appeared to have no effect.

Schleidt, Wolfgang M. PRECOCIAL SEXUAL BEHAVIOUR IN TURKEYS *(MELEAGRIS GALLOPAVO L.). Anim. Behav.* 18(4): 760-761, 1 fig. + 1 pl. 1970. *WR 142: 77*
[Univ. Md., College Park.] Summary: Precocial struts were observed in 95% of turkey poults of both sexes, wild and domesticated. In male turkey poults it occurred with about constant frequency up to day 100 (domesticated turkey: 0.6 struts per hr of observation time; wild turkeys: 0.1 struts per hr observation time) and dramatically increased in frequency after day 130. In female turkey poults, the incidence was much lower (about 0.01 struts per hr observation time) and did not show any marked increase later on. Struts can be elicited by objects the poults are imprinted upon (mother hen, siblings, or human hand or foot in human imprinted poults). However, precocial struts can also occur spontaneously; i.e. in the absence of external stimulation by an imprinting object.

Schulman, Allan H. PRECOCIAL SEXUAL BEHAVIOUR IN IMPRINTED MALE TURKEYS *(MELEAGRIS GALLOPAVO). Anim. Behav.* 18(4): 758-759 + 1 fig. on 1 pl. 1970. *WR 142: 77*
[Va. Polytech. Inst., Blacksburg.] Summary: Imprinted male turkeys were isolated from the imprinted surrogate for one week following training. When returned to the surrogate, a significant proportion of the birds exhibited precocial sexual courting only toward the model. This precocial sexual activity occurred in the absence of exogenously administered androgens.

Williams, Lovett E., Jr. TARSOMETATARSUS COLOR IN WILD TURKEYS. *J. Wildl. Mgmt.* 35(3): 550-553, 1 fig. July 1971. *WR 142: 77*
[Fla. Game & Fresh Water Fish Comm., Gainesville.]

Williams, Lovett E., Jr., and Robert D. McGuire. ON PRENUPTIAL MOLT IN THE WILD TURKEY. *J. Wildl. Mgmt.* 35(2): 394-395. Apr. 1971. *WR 142: 77*
[Fla. Game & Fresh Water Fish Comm., Gainesville.] Abstract: References to the prenuptial molt of wild turkeys *(Meleagris gallopavo)* in the literature are apparently based only upon a brief, tentative statement by an early writer who declined to describe the molt because he had insufficient evidence. In the present study, no evidence of a prenuptial molt was seen in eight captive *M. g.*

intermedia in Oklahoma, examined regularly during late winter, or in 220 wild-trapped *M. g. osceola* in Florida. Taking into account other recent winter-molt data on *M. g. silvestris*, we conclude that a prenuptial molt does not occur in the species.

DOVES & PIGEONS

Babb, David Eugene. POPULATION CHARACTERISTICS AND MOVEMENTS OF MOURNING DOVES IN SOUTHCENTRAL NEW MEXICO. *M.S. thesis, N. Mex. State Univ.* 1971. *WR 142: 78*

Population characteristics and movements of the mourning dove *Zenaidura macroura* were studied in the Mesilla Valley, New Mexico, for five years. Birds were most numerous in early June, declining to approximately 20% in September. The annual low point in abundance was reached in January. Size of the local summer population has increased slightly each year since 1967. Most breeding activity was completed two to three weeks prior to the September hunting season with 95% of all young being fledged by the first week in August. Fifty-six percent of the banded doves which were harvested were taken in their first year.--From abstr.

Blankenship, Lytle H., and Alan B. Humphrey, and Duncan MacDonald. A NEW STRATIFICATION FOR MOURNING DOVE CALL-COUNT ROUTES. *J. Wildl. Mgmt.* 35(2): 319-326, 2 figs. Apr. 1971. *WR 142: 78*

[East African Agr. & Forestry Res. Organization, Nairobi, Kenya.] Abstract: The mourning dove *(Zenaidura macroura)* call-count survey is a nationwide audio-census of breeding mourning doves.. Recent analyses of the call-count routes have utilized a stratification based upon physiographic regions of the United States. An analysis of 5 years of call-count data, based upon a stratification using potential natural vegetation, has demonstrated that this new stratification results in strata with greater homogeneity than the physiographic strata, provides lower error variance, and hence generates greater precision in the analysis without an increase in call-count routes. Error variance was reduced approximately 30% for the contiguous United States. This indicates that future analysis based upon the new stratification will result in an increased ability to detect significant year-to-year changes.

Bucher, Enrique H. CONSIDERACIONES ECOLOGICAS SOBRE LA PALOMA *ZENAIDA AURICULATA* COMO PLAGA EN CÓRDOBA. [ECOLOGICAL CONSIDERATIONS ON THE DOVE *ZENAIDA AURICULATA* AS A PEST IN CÓRDOBA.] *Min. Econ. & Hacienda Dirección Provincial Asuntos Agrarios Ser. Cienc. & Teon.* no. 1 (Córdoba, Argentina). 11 p., 2 figs. 1970. In Spanish with English summ. *WR 142: 78*

[Avenida Vélez Sársfield 299, Córdoba, Argentina.] The mosaic pattern landscape provides roosting-breeding sites and abundant food supply and the intensive sowing of sorghum.

Budgell, Philip. MODULATION OF DRINKING BY AMBIENT TEMPERATURE CHANGES. *Anim. Behav.* 18(4): 753-757, 5 figs. 1970. *WR 142: 78*

[Inst. Exp. Psychol., Oxford, England.] Summary: Barbary doves [*Streptopelia risoria*] deprived of water at different ambient temperatures, but tested at the same temperature, have the same body weight change, and drink the same amounts during the test. However, doves deprived at the same temperature, and tested at different temperatures, drink different amounts. The conclusion that ambient temperature has a direct effect on drinking is supported by the finding that the response rate in an operant situation can follow harmonic changes in ambient temperature, thus permitting a frequency analysis of the temperature-drinking system.

Carpenter, James W. FOOD HABITS OF THE MOURNING DOVE IN NORTHWEST OKLAHOMA. *J. Wildl. Mgmt.* 35(2): 327-331, 1 fig. Apr. 1971. *WR 142: 78*

[Okla. State Univ., Stillwater.] Abstract: Food habits of the mourning dove *(Zenaidura macroura)* were ascertained from 546 birds collected in northwest Oklahoma, June through October 1968. Seeds of 57 plant species from 22

families were represented in their diet. By volume, Gramineae comprised 66.5% of the total food consumed. Agricultural crops comprised 61.2% of the total volume, with wheat *(Triticum aestivum)* representing 55.7%. Forb and weed seeds represented 32.6%. Of these, the most important were croton *(Croton* sp.), tropic croton *(Croton glandulosus)*, and sunflower *(Helianthus* spp.) seeds. The food habits of doves exhibited seasonal variability. Wheat was the most important food, based on both volume of food consumed and frequency of occurrence, from June through September. Sunflower seeds were the most important food in October.

Davis, Charles A., David E. Babb, and Warren B. Ballard. FOODS OF MOURNING DOVES IN THE MESILLA VALLEY OF SOUTH-CENTRAL NEW MEXICO. *N.Mex. State Univ., Agr. Exp. Sta. Res. Rep.* 201. [i] + 4 p. July 1971. *WR 142: 79*

Principal foods were agricultural crops and weeds. Cultivated grains made up 66.7% of the total, and weeds contributed more than 25%. Sorgho was the food used most and was the principal species in the craws in every month except July and September.--From summ.

Dowsett, R. J. PIGEONS AND DOVES CALLING AT NIGHT. *British Birds* 64(1): 33. Jan. 1971. *WR 142: 79*

[P.O. Box 12, Monze, Zambia.] *Columba palumbus* in southern Zambia.

George, Uwe. BEOBACHTUNGEN AN *PTEROCLES SENEGALLUS* UND *PTEROCLES CORONATUS* IN DER NORDWEST-SAHARA. [OBSERVATIONS ON *PTEROCLES SENEGALLUS* AND *PTEROCLES CORONATUS* IN THE NORTHWESTERN SAHARA.] *J. Ornithol.* 111(2): 175-188. 1970. [From Biol. Abstr. 52(6), 1971. In German with English summ.] *WR 142: 79*

[Hamburg, Germany.]

Greiner, Ellis C. EPIZOOTIOLOGICAL STUDIES ON *HAEMOPROTEUS* IN NEBRASKA MOURNING DOVES *(ZENAIDURA MACROURA)*. *J. Parasitol.* 56(1): 187-188. Feb. 1970. *WR 142: 79*

[Univ. Nebr., Lincoln.] *Haemoproteus maccallumi* and *H. sacharovi* infections occurred in 84% of the doves examined.

Kocan, Richard M., and Alexander Sprunt IV. THE WHITE-CROWNED PIGEON: A FRUIT-EATING PIGEON AS A HOST FOR *TRICHOMONAS GALLINAE*. *J. Wildl. Dis.* 7(3): 217-218. July 1971. *WR 142: 79*

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Trichomoniasis resulting from infection by *Trichomonas gallinae* was observed in 12 laboratory reared white-crowned pigeons *(Columba leucocephala)*. A field survey of nestlings in the Florida Keys revealed a prevalence of 88% *T. gallinae* carriers but no evidence of trichomoniasis could be found among the wild birds.

Kreitzer, J. F. EGGSHELL THICKNESS IN MOURNING DOVE POPULATIONS. *J. Wildl. Mgmt.* 35(3): 563-564. July 1971. *WR 142: 79*

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Eggs *(n=452)* of the mourning dove *(Zenaidura macroura)* were collected from 9 states in 1969 and 11 states in 1970, and shell thickness was compared with that of eggs *(n=97)* collected from 24 states during the years 1861 to 1935. Mean shell thickness did not differ significantly in the test groups.

Kruckenberg, Larry. MOURNING DOVES: A 40-YEAR SUMMARY OF NORTH DAKOTA BAND RECOVERIES. *N. Dak. Outdoors* 34(2): 10-12, illus. Aug. 1971. *WR 142: 79*

Summarization of 278 band recoveries--179 from the U.S., 89 from Mexico, and 10 from Central America. Nearly half of the U.S. recoveries were made in Texas.

Schmidt-Koenig, Klaus. ENTFERNUNG UND HEIMKEHRVERHALTEN DER BRIEFTAUBE. [DISTANCE AND HOMING BEHAVIOR IN PIGEONS.] *Z. Vergl. Physiol.* 68(1): 39-48, illus. 1970. [From Biol. Abstr. 52(1), 1971. In German with English summ.] *WR 142: 79*

[I. Zool. Inst., Univ., Gottingen, Germany.]

Adamson, C. M. LITTLE GREBE ACTIVELY DEFENDING NEST-SITE FROM COOT. *British Birds* 64(2): 75-76. Feb. 1971. *WR 142: 80*
[5 Denway Grove, Seaton Sluice, Whitley Bay, Northumberland, England.] *"Podiceps rufiocollis* and *Fulica atra."*

Anderson, Bertin W., and Richard L. Timken. AGE AND SEX CHARACTERISTICS OF COMMON MERGANSERS. *J. Wildl. Mgmt.* 35(2): 388-393, 3 figs. Apr. 1971. *WR 142: 80*
[Northwestern State Coll., Alva, Okla.] Abstract: Age and sex characteristics of 269 common mergansers *(Mergus merganser)* collected during November-March (1966-70) are reported. Specimens were aged by bursal index technique and were sexed internally. Red bills, red feet, or both indicated adults; yellow bills, yellow feet, or both, indicated immatures. Wings 264 mm or longer were usually from males. A black distal bar on the greater secondary wing coverts identified adult females. Monthly gonad indices of adults were consistently larger than gonads of immatures, and oviductal width in adult females was usually wider than in immatures. Contrary to statements in the literature, immature males do not molt extensively during winter, and immature females also probably do not. Molt in adult males is completed during December.

Balát, František. ON THE WING-MOULT IN THE MALLARD, *ANAS PLATYRHYNCHOS*, IN CZECHOSLOVAKIA. *Zool. Listy* 19(2): 135-144, illus. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 80*
[Inst. Vertebr. Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Bengtson, Sven-Axel. LOCATION OF NEST-SITES OF DUCKS IN LAKE MÝVATN AREA, NORTHEAST ICELAND. *Oikos* 21(2): 218-229, illus. 1970. [From Biol. Abstr. 52(11), 1971. In English with Russian summ.] *WR 142: 80*
[Univ. Lund, Lund, Sweden.]

Bezzel, Einhard. DURCHZUG UND UEBERWINTERUNG DES BLESSHUHNS *(FULICA ATRA)* IN BAYERN. [MIGRATION AND OVERWINTERING OF THE COOT *(FULICA ATRA)* IN BAVARIA (GERMANY).] *Anz. Ornithol. Ges. Bayern* 9(3): 202-207, illus. 1970. [From Biol. Abstr. 52(11), 1971. In German with English summ.] *WR 142: 80*
[Staatl. Vogelschutzwarte, Garmisch-Partenkirchen, Germany.]

Bjerke, Tore, and Leif G. Bjerke. NOTE: IMPRINTABILITY OF GOLDENEYES *(BUCEPHALA CLANGULA)*. *Psychol. Rep.* 27(3): 981-982. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 80*
[Univ. Oslo, Oslo, Norway.]

Bolen, Eric G. PAIR-BOND TENURE IN THE BLACK-BELLIED TREE DUCK. *J. Wildl. Mgmt.* 35(2): 385-388. Apr. 1971. *WR 142: 80*
[Tex. Tech. Univ., Lubbock.] Abstract: Evidence of lifelong pair bonds for black-bellied tree ducks *(Dendrocygna autumnalis)* was determined from instances of year-to-year mate retention and, indirectly, from renesting studies.

Caldwell, Patrick John. NEST MICROCLIMATE AND NESTING BEHAVIOR IN THE MALLARD *(ANAS PLATYRHYNCHOS)* AT DELTA, MANITOBA. *M.S. thesis, Univ. Fla.* 116 p. Aug. 1971. *WR 142: 80*
The preincubation period was characterized by large fluctuations in egg temperatures due to the female's absence from the nest during the night. Normal incubation also was characterized by many smaller temperature fluctuations resulting from duck rest periods and movement of eggs. The energy cost of incubation was calculated to be 68 kcal per day during mid-incubation. This is above that freely available in the daily energy budget and probably results in duck weight loss. Female behavior was affected by cold ambient temperature and rain; both contributed to reduced female activity and increased incubation except during the last 2 days when the female became more active. Egg movement was frequent, occurring at least 1.5 times per hour. Egg position relative to gravity was remarkably constant because of weight asymmetry.--From abstr. Courtesy/ George Cornwell.

Chamberlain, Everett B., R. Kahler Martinson, and Sharon L. Clark, compilers. WATERFOWL STATUS REPORT, 1970. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 138. ii + 157 p., 1 fig. 1971. For sale at $1.25 by Supt. Documents, GPO, Washington, D.C. *WR 142: 81*

Tabulations of the 1970 waterfowl population and habitat surveys and the results of mail surveys of waterfowl hunters for the 1969-70 season are presented.

Emmons, Jonathan Craig. EXPERIMENTAL INTRODUCTION OF THE GADWALL, *ANAS STREPERA*, ON A FLORIDA COASTAL MARSH. *M.S. thesis, Univ. Fla.* 89 p. June 1971. *WR 142: 81*

Gadwalls are capable of at least limited reproduction in areas with climates similar to the Gulf Coast of Florida. Five of ten nests initiated were successful and produced 27 ducklings. Predation pressure and migratory behavior may limit the eventual establishment of a substantial resident population of gadwall in the South's wetlands. Intensive research on Florida and mottled ducks could provide insight to the characteristics necessary for waterfowl to succeed as permanent residents of southern marshes.--From abstr. Courtesy/ George Cornwell.

Geis, Aelred D., Robert I. Smith, and John P. Rogers. BLACK DUCK DISTRIBUTION, HARVEST CHARACTERISTICS, AND SURVIVAL. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 139. xxii + 241 p., 21 figs. + 8 microfiche cards. 1971. For sale by Supt. Documents, GPO, Washington, D.C. *WR 142: 81*

Contents: Introduction, Major sources of information, Procedures, Summer and winter reference areas of banding, Hunting regulations and the number of hunters, Rate of hunting kill, Geographic and chronologic distribution of the black duck kill, Number of black ducks killed by hunting, Sources of kill in harvest areas, Mortality rates, Production rates, Sex ratios, Estimates of black duck population levels, and Summary, management implications and research needs.

Haila, Yrjö. HAVAINTOJA KÖKARIN SAARISTON VESILINNUISTA TALVINA 1968/69 JA 1969/70. [OBSERVATIONS ON SEAFOWL IN WINTERS 1968/69 AND 1969/70 IN THE KÖKAR ARCHIPELAGO OFF THE SW COAST OF FINLAND.] *Suomen Riista* 23: 51-64, 4 figs. 1971. In Finnish with English summ. *WR 142: 81*

Waterfowl and cormorants.

Haverschmidt, Francois. DIE BLAUFLUEGEL-ENTE *(ANAS DISCORS)* IN NOERDLICHEN SUEDAMERIKA NEBST BERINGUNGS-ERGEBNISSEN AUS SURINAM. [THE BLUE-WINGED TEAL *(ANAS DISCORS)* IN NORTHERN SOUTH AMERICA ALONG WITH RESULTS OF BANDING IN SURINAM.] *Vogelwarte* 25(3): 229-233. 1970. [From Biol. Abstr. 52(6), 1971. In German with English summ.] *WR 142: 81*

Havlin, Havlin. BREEDING SEASON AND SUCCESS IN THE COOT *(FULICA ATRA)* ON THE NÁMESTSKÉ RYBNÍKY PONDS (CZECHOSLOVAKIA). *Zool. Listy* 19(1): 35-53, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 81*

[Inst. Vertebrate Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Herman, C. M., and R. M. Kocan. OCCURRENCE OF *PLASMODIUM* IN ANATIDAE. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, Sect. II, pt. 1): 143. Aug. 1970. Abstract only. *WR 142: 81*

[Kocan: Patuxent Wildl. Res. Center, Laurel, Md.]

Hocutt, Grady E., and Ralph W. Dimmick. SUMMER FOOD HABITS OF JUVENILE WOOD DUCKS IN EAST TENNESSEE. *J. Wildl. Mgmt.* 35(2): 286-292, 1 fig. Apr. 1971. *WR 142: 81*

[Necedah Natl. Wildl. Refuge, Necedah, Wis.] Abstract:- Fifty-seven juvenile wood ducks *(Aix sponsa)* were collected by shooting on John Sevier Lake in east Tennessee. Predominant plant foods of these ducks were tubers from sago pondweed *(Potamogeton pectinatus)*, foliage of water-stargrass *(Heteranthera dubia)*,

foliage of curly-leaved pondweed *(P. crispus)*, and drupes from wild black cherry trees *(Prunus serotina)*. Plant foods eaten by ducklings were related to the abundance of certain plant species. Animal foods important to juvenile wood ducks were the orders Diptera (particularly Chironomidae), Coleoptera, Odonata, and Lepidoptera. The ducklings utilized 86.8% plant foods and 13.2% animal foods, exhibiting a pronounced shift from animal food to plants as the ducklings increased in age. We concluded that the nutritional welfare of juvenile wood ducks on John Sevier Lake was dependent upon the occurrence and abundance of the various aquatic plants. Aquatic vegetation served as food for the wood ducks and as habitat for insects so important in the diets of young juveniles.

Holmes, John C. HELMINTH COMMUNITIES IN WATERFOWL AND THEIR RELATIONSHIPS WITH THE FOOD HABITS OF THE HOSTS. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 153. Aug. 1970. Abstract only. *WR 142: 82*
[Univ. Alberta, Edmonton, Canada.]

Jenkins, David. EIDERS NESTING INLAND IN EAST LOTHIAN. *Scottish Birds* 6(5): 251-255, 1 fig. Spring 1971. *WR 142: 82*
Nests of *Somateria mollissima* were found up to 3 Km from the sea in plowed and newly planted fields.

Johnstone, S. T. WATERFOWL EGGS. *Avicultural Magazine* 76(2): 52-55. Mar.-Apr. 1970. *WR 142: 82*
[Wildfowl Trust, Slimbridge, Gloucestershire, England.] Details of waterfowl eggs, including size and color, nature of shell, clutch size, and incubation period are tabulated for 13¼ spp. of Anatidae.

Kimball, W. H., and Z. A. Munir. THE CORROSION OF LEAD SHOT IN A SIMULATED WATERFOWL GIZZARD. *J. Wildl. Mgmt.* 35(2): 360-365, 1 fig. Apr. 1971. *WR 142: 82*
[San Jose State Coll., San Jose, Calif.] Abstract: A simulated waterfowl-gizzard environment was used to study the corrosion of commercial and alloyed lead shot. The corrosion rate of No. 4 commercial shot was found to be about 5 mg/day in this simulated environment; the average time for each shot to completely dissolve was calculated to be 40 days. The latter result appears to be in good agreement with reported x-ray observations on shot ingested into gizzards of waterfowl. At activities close to those found in a natural system, the enzyme pepsin was found to have little or no influence on the corrosion rate of the commercial shot. However, when present at relatively high activities, pepsin seems to have an inhibiting effect on the corrosion mechanism of lead shot. The corrosion rates of lead were only slightly changed by alloying with Bi and Sn. The corrosion behavior of the lead plus zinc alloys was not significantly different from that of the commercial shot. The observed decrease in the corrosion rate of the Pb-Sn alloy was not substantial, and thus it appears that the solution to the lead poisoning problem in waterfowl lies in the use of lead-free alloys.

Lavery, H. J. STUDIES OF WATERFOWL (ANATIDAE) IN NORTH QUEENSLAND: III. HARVESTS. *Queensland J. Agr. Anim. Sci.* 26(4): 677-690, illus. 1969. [From Biol. Abstr. 52(5), 1971.] *WR 142: 82*
[Anim. Health Sta., Townsville, Queensland, Australia.]

MacNeill, A. C. *AMIDOSTOMUM ANSERIS* INFECTION IN WILD SWANS AND GOLDENEYE DUCKS. *Canadian Vet. J.* 11(8): 164-167. 1970. [From Biol. Abstr. 52(6), 1971. In English with French summ.] *WR 142: 82*
[Canadian Dep. Agr., Vancouver, British Columbia, Canada.]

Mathiasson, S. NUMBERS AND DISTRIBUTION OF LONG-TAILED WINTERING DUCKS IN NORTHERN EUROPE. *British Birds* 63(10): 414-424, 2 figs. 1970. *WR 142: 83*
[Naturhist. Mus., Göteborg, Sweden.] The long-tailed duck *Clangula hyemalis* has decreased as a breeding species in Scandinavia and is believed to have done so in its winter quarters in the southern Baltic. The International Wildfowl Research Bureau attempted a winter census in the Baltic and North Sea in 1961/62 and 1962/63. Methods varied from regular local censuses to counts along large sections of coast or from ships, as well as chance observations. Total figures were therefore impossible, but summaries are given of the reports by countries, the main wintering areas, timing of migration, winter movements, flock size, sex ratios, habitat and food.--From summ.

Millikan, George Clinton. THE DEVELOPMENT OF FILIAL BEHAVIOR IN DUCKLINGS. *Ph.D. thesis, Duke Univ.* 97 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31 (11), 1971.] *WR 142: 83*
Studies of *Anas platyrhynchos*. It is concluded that the end of the sensitive period for imprinting is determined by physiological maturation. The end may be accelerated both by imprinting itself and by unspecific effects of experience.

Moilanen, Pekka. ETELÄ-HÄMEESSÄ LUONNONVARAISESTI TALVEHTIVISTA SINISORSISTA. [ON THE MALLARDS *(ANAS PLATYRHYNCHOS)* WINTERING IN NATURAL CONDITIONS IN SOUTHERN HÄME, SOUTHERN FINLAND.] *Suomen Riista* 23: 23-38, 9 figs. 1971. In Finnish with English summ. *WR 142: 83*

Muntyanu, A. I. [ECOLOGY OF COOT IN MOLDAVIA.] *Izv. Akad. Nauk Mold. SSR Ser. Biol. Khim. Nauk* 1: 29-35, illus. 1970. [From Biol. Abstr. 52(4), 1971.. In Russian.] *WR 142: 83*

Nagel, John E., and Jessop B. Low. EFFECT OF REGULATIONS ON WATERFOWL KILL IN UTAH. *J. Wildl. Mgmt.* 35(3): 554-557, 3 figs. July 1971. *WR 142: 83*
[Utah State Div. Fish & Game, Salt Lake City.] Abstract: Daily records of waterfowl-hunter bags on a private gun club in northern Utah were compared with records of waterfowl-hunter bags on an adjacent public hunting area, for the period 1932-65. The comparison indicates that the daily bag effectively restricted activities of hunters on the private club but had little effect upon success of hunters who utilized the public shooting area. Other regulations, such as length of season and bag limit, appeared to have comparable effects on both areas.

Nilsson, Leif. ANDRAGELRAEKNINGAR I SVERIGE JANUARI 1969 OCH 1970 SAMT NOVEMBER 1969. [WILDFOWL COUNT IN SWEDEN: JANUARY 1969 AND 1970, NOVEMBER 1969.] *Vår Fågelvärld* 29(3): 149-159, illus. 1970. [From Biol. Abstr. 52(9), 1971. In Norwegian.] *WR 142: 83*
[Univ. Lund, Lund, Sweden.]

Nilsson, Leif. FOOD-SEEKING ACTIVITY OF SOUTH SWEDISH DIVING DUCKS IN THE NON-BREEDING SEASON. *Oikos* 21(2): 145-154, illus. 1970. [From Biol. Abstr. 52(11), 1971. In English with Russian summ.] *WR 142: 83*
[Univ. Lund, Lund, Sweden.]

Norman, F. I. MOVEMENT AND MORTALITY OF WOOD DUCKS BANDED IN VICTORIA. *Emu* 71(2): 57-60, 1 fig. Apr. 1971. *WR 142: 83*
[Arthur Rylah Inst. Environ. Res., 123 Brown St., Heidelberg, Victoria, Australia.] Summary: Results of banding 1,533 Wood Ducks, almost all in Victoria, are discussed. Dispersal from the main banding locality (Serendip, near Geelong) was generally northwards into the plains of inland Victoria and southern New South Wales; similar results were obtained from other banding localities. Movement was restricted, about 60% of recoveries being within 200 km of the banding site. Shooting provided most recoveries, and estimates of mortality, based on return of bands from shot birds, indicate that some 57% of birds die within one year of banding. Results of X-ray studies show that adult males are more prone to shooting than other age or sex-groups, but shooting of the species is not so severe in Victoria as elsewhere. The species will probably remain secure while habitat remains in its present state.

Page, Roger D., and J. Frank Cassel. WATERFOWL NESTING ON A RAILROAD RIGHT-OF-WAY IN NORTH DAKOTA. *J. Wildl. Mgmt.* 35(3): 544-549. July 1971. *WR 142: 84*

[Univ. Mont., Missoula.] Abstract: A 21.5-mile section of the Northern Pacific Railway's main line right-of-way in the Missouri coteau of North Dakota was studied to determine waterfowl production on both hayed and unhayed acreage. Overall nest success was 83%. Nest densities were 9.6 nests per 100 acres on hayed areas and 55.6 nests per 100 acres on unhayed areas. The acres mowed for hay produced 0.64 duckling per acre, and the unmowed acres produced 3.93 ducklings for each acre. We suggest that for optimum waterfowl production, all annual cover removal be discontinued.

Pirkola, Matti K., and Esa Niemelä. SORSASAALIIT SYKSYLLÄ 1968 SIIPINÄYTTEIDEN VALOSSA. [DUCK WING COLLECTION SURVEY IN FINLAND AUTUMN 1968.] *Suomen Riista* 23: 119-126, 4 figs. 1971. In Finnish with English summ. *WR 142: 84*

Quame, Orlo A., and Alfred H. Grewe, Jr. WATERFOWL PRODUCTION IN A SELECTED WETLAND MANAGEMENT AREA. *J. Minn. Acad. Sci.* 36(2/3): 89-92, illus. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 84*

[Senior High School, Benson, Minn.]

Rabol, Jørgen, and Henning Noer. SVØMMEFUGLETRAEKKET VED KNUDSHOVED, ØSTFYN. [WATERBIRD-MIGRATION AT KNUDSHOVED, EASTERN FUNEN.] *Flora Fauna* 76(1): 1-18, illus. 1970. [From Biol. Abstr. 52(4), 1971. In Danish with English summ.] *WR 142: 84*

[Zool. Lab., Copenhagen, Denmark.]

Sauder, Darrel W., Raymond L. Linder, Robert B. Dahlgren, and W. L. Tucker. AN EVALUATION OF THE ROADSIDE TECHNIQUE FOR CENSUSING BREEDING WATERFOWL. *J. Wildl. Mgmt.* 35(3): 538-543. July 1971. *WR 142: 84*

[Ellsworth Air Force Base, Rapid City, S. Dak.] Abstract: An evaluation of the roadside technique for censusing breeding waterfowl was conducted in east-central South Dakota. The number of counts necessary to achieve precision within 20% of the mean (90% confidence level) depended on whether wetland numbers or the number of transect miles were to be tested. On a 54-mile transect in 1968, five counts using miles and three using wetlands were necessary to achieve the above precision for blue-winged teals *(Anas discors)* and gadwalls *(A. strepera)*. On this same transect, four counts were necessary for mallards *(A. platyrhynchos)*, based on miles, and three based on wetlands. Shorter transects (7 and 21 miles) used in 1967 to census blue-winged teal required more counts (6 to 25) for similar precision. Optimum periods for censusing different species of ducks did not occur at the same time. Old vegetation in wetlands affected early counts of waterfowl, and new vegetative growth began affecting observability of ducks by the third week of May in 1967 and 1968. Significantly more ($P<0.05$) ducks were observed on Type 4 wetlands than on other wetland types and on Type 4 wetlands with 35 to 60% vegetative cover than on those with less or more cover. Wind and light conditions exerted no significant influence on counts of breeding waterfowl pairs.

Siegfried, W. R. FEEDING ASSOCIATION BETWEEN *PODICEPS RUFICOLLIS* AND *ANAS SMITHII*. *Ibis* 113(2): 236-238. Apr. 1971. *WR 142: 84*

[Percy FitzPatrick Inst. African Ornithol., Rondebosch, Cape, South Africa.]

Williams, Murray, and M. J. Imber. THE ROLE OF MARGINAL VEGETATION IN SOME WATERFOWL HABITATS (DUCKS). *New Zealand Ecol. Soc. Proc.* 17. p. 126-128, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 84*

[New Zealand Wildl. Serv., Dep. Intern. Affairs, Wellington, New Zealand.]

Williams, W. M. H. SOME NOTES ON THE REARING OF BUFFLEHEAD AND HOODED MERGANSERS *(BUCEPHALA ALBEOLA* AND *MERGUS CUCULLATUS)*. *Aviculr. Mag.* 77(2): 58-65, [2 figs. + 2 pls.] Mar.-Apr. 1971. *WR 142: 84*

[Harpenden, Hertfordshire, England.]

Bell, R. Q., and W. D. Klimstra. FEEDING ACTIVITIES OF CANADA GEESE *(BRANTA CANADENSIS INTERIOR)* IN SOUTHERN ILLINOIS. *Trans. Ill. State Acad. Sci.* 63(3): 295-304, illus. 1970. [From Biol. Abstr. 52(10), 1971.] *WR 142: 85*
[Southern Ill. Univ., Carbondale.]

Bjärvall, Anders, and Arnold Samuelsson. STUDIER ÖVER DE VITKINDADE GÄSSENS BETNING PA GOTLAND. [A STUDY OF GRAZING BY BARNACLE GEESE *(BRANTA LEUCOPSIS)* ON THE ISLAND OF GOTLAND.] *Zool. Revy* 32(1): 26-33, illus. 1970. [From Biol. Abstr. 52(11), 1971. In Swedish.] *WR 142: 85*
[Svenska Naturskyddsföreningen, Stockholm, Sweden.]

Bloch, Dorete. YNGLEBESTANDEN AF KNOPSVANE *(CYGNUS OLOR)* I DANMARK I 1966. [THE BREEDING POPULATION OF THE MUTE SWAN *(CYGNUS OLOR)* IN DENMARK IN 1966.] *Danske Vildtundersøgelser* 16. 47 p., 17 figs. 1971. In Danish with English summ. *WR 142: 85*
The distribution and production of mute swans in Denmark in 1966 based on questionnaire data, aerial counts, and field investigations.--From summ.

Chapman, Joseph A. WEIGHTS AND MEASUREMENTS OF DUSKY CANADA GEESE WINTERING IN OREGON. *Murrelet* 51(3): 34-37. Sept.-Dec. 1970. *WR 142: 85*
[Univ. Md., LaVale.] *"Branta canadensis occidentalis."*

Culbertson, James L., Larry L. Cadwell, and Irven O. Buss. NESTING AND MOVEMENTS OF CANADA GEESE ON THE SNAKE RIVER IN WASHINGTON. *Condor* 73(2): 230-236, 2 figs. Summer 1971. *WR 142: 85*
[Minn. Dep. Conserv., Box 111, Marshall.] *"Branta canadensis moffitti."*--Courtesy/ Paul A. Stewart.

Denson, Eley P., Jr. THE TRUMPETER SWAN, *OLOR BUCCINATOR*: A CONSERVATION SUCCESS AND ITS LESSONS. *Biol. Conserv.* 2(4): 253-256, illus. 1970. [From Biol. Abstr. 52(4), 1971.] *WR 142: 85*
[Bur. Sport Fisheries & Wildl., Washington, D.C.]

Fabricius, Eric. KANADENSISKA NYBYGGARE. [CANADIAN SETTLERS. A SURVEY OF THE CANADA GOOSE *(BRANTA CANADENSIS)* IN SWEDEN.] *Zool. Revy* 32(1): 19-25, illus. 1970. [From Biol. Abstr. 52(11), 1971. In Swedish with English summ.] *WR 142: 85*
[Univ. Stockholm, Stockholm, Sweden.]

Herman, C. M., J. Barrow, Jr., and I. B. Tarshis. EPIZOOTIOLOGY OF *LEUCOCYTOZOON* IN CANADA GEESE *(BRANTA CANADENSIS)*. In: *(Proceedings of the Second International Conference of Parasitology / 6-12 September 1970 / Washington, D.C.) J. Parasitol.* 56(4, sect. II, pt. 1): 143-144. Aug. 1970. Abstract only. *WR 142: 85*
[Barrow: Hiram Coll., Hiram, Ohio.]

Hüdec, Karel, and Jiří Formanek. RINGING RESULTS OF THE GREYLAG GOOSE *(ANSER ANSER)* IN CZECHOSLOVAKIA. *Zool. Listy* 19(2): 145-162, illus. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 85*
[Inst. Vertebr. Zool., Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Norderhaug, Magnar. THE PRESENT STATUS OF THE PINK-FOOTED GOOSE *(ANSER FABALIS BRACHYRHYNCHUS)* IN SVALBARD. *Norsk Polarinst. Arbok 1969*. p. 55-69, illus. 1970. [From Biol. Abstr. 52(12), 1971.] *WR 142: 85*

Schettler, C. H. GOOSE VIRUS HEPATITIS IN THE CANADA GOOSE AND SNOW GOOSE. *J. Wildl. Dis.* 7(3): 147-148. July 1971. *WR 142: 85*
[Ludwig-Maximilians-Univ., Munich, Germany.] Abstract: Seven Canada goose goslings and one snow goose gosling died suddenly and were presented for diagnosis. Gross and microscopic lesions of hepatitis were observed in all birds. A virus was isolated in embryonated goose eggs which, on the basis of complement fixation and immunofluorescence tests, was identified as goose hepatitis virus. The epornitiology of this virus is discussed.

Stone, Ward B., and Allan D. Marsters. AGGRESSION AMONG CAPTIVE MUTE SWANS. *N.Y. Fish & Game J.* 17(1): 50-52, 3 figs. Jan. 1970. *WR 142: 86*
"Cygnus olor."

SHOREBIRDS, MARSH BIRDS & THEIR ALLIES

Bang, B. G. OLFACTION IN RALLIDAE (GRUIFORMES), A MORPHOLOGICAL STUDY OF THIRTEEN SPECIES. *J. Zool.* (London) 156(1): 97-107, illus. 1968. [From Biol. Abstr. 52(8), 1971.] *WR 142: 86*
[Johns Hopkins Univ., Baltimore, Md.]

Bateman, Darrel Lee. MOVEMENT-BEHAVIOR IN THREE SPECIES OF COLONIAL-NESTING WADING BIRDS: A RADIO-TELEMETRIC STUDY. *Ph.D. thesis, Auburn Univ.* 246 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 86*
The daily movements and behavior of cattle egrets *(Bubulcus ibis* Linnaeus), white ibises *(Eudocimus albus* Linnaeus), and little blue herons *(Florida caerulea* Linnaeus) were investigated in southeast Alabama and northwest Florida.

Boer, P. DE NEDERLANDSE SCHOLEKSTER ALS STAND- EN TREKVOGEL. [THE DUTCH OYSTERCATCHER AS A RESIDENT AND MIGRANT.] *Limosa* 43(3/4): 127-131. 1970. [From Biol. Abstr. 52(11), 1971. In Dutch with English summ.] *WR 142: 86*

Brown, Leslie H., and Alan Root. THE BREEDING BEHAVIOUR OF THE LESSER FLAMINGO *PHOENICONAIAS MINOR*. *Ibis* 113(2): 147-172, 2 figs. + 2 pls. Apr. 1971. *WR 142: 86*
[P.O. Box 24916, Karen, Kenya.]

Carpenter, James W. NOTES ON THE BIOLOGY AND BEHAVIOR OF CAPTIVE BOAT-BILLED HERONS, *COCHLEARIUS COCHLEARIUS*. *Southwestern Natur.* 16(1): 31-41, 1 fig. 23 July 1971. *WR 142: 86*
[Okla. Coop. Wildl. Res. Unit, Stillwater.] Abstract: Captive boat-billed herons *(Cochlearius cochlearius)* were observed from June 15 to August 23, 1967. Their biology, development, maintenance and comfort activities, and agonistic and sexual behavior are described.

Dybbro, Romny. FISKEHEJRENS *(ARDEA CINEREA)* UDBREDELSE I DANMARK 1968. [DISTRIBUTION OF THE GREY HERON *(ARDEA CINEREA)* IN DENMARK 1968.] *Dan. Ornithol. Foren. Tidsskr.* 64(1/2): 45-69, illus. 1970. [From Biol. Abstr. 52(2), 1971. In Danish with English summ.] *WR 142: 86*

Fogarty, Mike. THE CATTLE EGRET. *Fla. Wildl.* 24(11): 21, illus. Apr. 1971. *WR 142: 86*
Grasshoppers and crickets comprised 80% of the birds' summer diet. Vertebrate foods amounted to 7.5%, and approximately 4.5% consisted of spiders. No small birds or ticks were found in the stomachs from the 1,000-bird sample.

Grant, Gilbert S. THREE-YEAR STUDY OF THE HERONRY AT ALLIGATOR BAY, N.C. *Chat* 35(1): 5-9. Mar. 1971. *WR 142: 86*
[Rt. 1, Box 563, Sneads Ferry, N.C.] Summary: The Alligator Bay heronry near Sneads Ferry, N.C., was studied during the 1968, 1969, and 1970 breeding seasons. The islands that make up the colony are in various vegetational stages, and bird distribution is changing with plant growth. A total of 523 nests were found in 1969, but this decreased to 369 nests in 1970 due to the dying of many trees that supported nests previously. Nesting chronology and social dominance patterns are discussed in relation to the increased competition for nest sites in 1970. Young Cattle Egrets with black bills were studied, and notes are included on this vaguely known subject.--Courtesy/ Paul A. Stewart.

Holt, E. G. OYSTERCATCHER BROODING STONES. *British Birds* 63(10): 427. 1970. *WR 142: 87*
"Haematopus ostralegus."

Holyoak, D. T. THE BEHAVIOUR OF CAPTIVE PURPLE GALLINULES *(PORPHYRIO PORPHYRIO)*. *Aviculr. Mag.* 76(3): 98-109, [12] figs. May-June 1970. *WR 142: 87*
[British Trust Ornithol., Tring, Hertfordshire, England.] Observations on the behavior of seven captive gallinules, including preening, feeding, tail-flicking, calls, aggression, courtship, and breeding behavior.

Ivanova, N. S. [BIOLOGY OF REPRODUCTION AND POSTEMBRYONIC DEVELOPMENT OF THE SNIPE.] *Vestn. Leningrad Univ. Ser. Biol.* 25(3): 24-35, illus. 1970. [From Biol. Abstr. 52(9), 1971. In Russian with English summ.] *WR 142: 87*
[Leningrad State Univ., Leningrad, USSR.]

Kahl, M. P. OBSERVATIONS ON THE JABIRU AND MAGUARI STORKS IN ARGENTINA, 1969. *Condor* 73(2): 220-229, 7 figs. Summer 1971. *WR 142: 87*
[661 Rudder Rd., Naples, Fla.] Studies were conducted July-September 1969 on the Jabiru and Maguari storks in Argentina. Most field work was done in Corrientes Province, and a number of active nests of both species were found there. Data are presented on reproductive biology, ecology, and behavior.--From summ. Courtesy/ Paul A. Stewart.

Keith, Stuart, C. W. Benson, and M. P. Stuart Irwin. THE GENUS *SAROTHRURA* (AVES, RALLIDAE). *Bull. Amer. Mus. Natur. Hist.* 143(1): 4-84, illus. 1970. [From Biol. Abstr. 52(11), 1971.] *WR 142: 87*
[Amer. Mus. Natur. Hist., New York, N.Y.]

Keskpaik, Y., N. Ivanova, Keskpaik Tiiu, and A. Kallis. [THE FACTORS DETERMINING THE STRUCTURE OF STEREOTYPIC BEHAVIOR OF THE FAMILY GROUPS AND THE REASON FOR ITS CHANGES IN *CHARADRIUS H. HIATICULA* L.] *Isv. Akad. Nauk Est. SSR Ser. Biol.* 19(3): 195-210, illus. 1970. [From Biol. Abstr. 52(10), 1971. In Russian with English summ.] *WR 142: 87*

Marián, Miklós. DER BESTAND DES WEISSSTORCHS *(C. CICONIA)* IN UNGARN 1963. [WHITE STORK *(CICONIA CICONIA)* CENSUS IN HUNGARY 1963.] *Vogelwarte* 25(3): 255-257. 1970. [From Biol. Abstr. 52(10), 1971. In German with English summ.] *WR 142: 87*
[Móra Ferenc Múz., Szeged, Hungary.]

Medway, Lord, and Richard P. Lim. POST-JUVENILE DISPERSAL OF NIGHT HERONS IN MALAYA. *Bird-Banding* 41(4): 265-274, 2 figs. Oct. 1970. *WR 142: 87*
[Great Glemham House, Saxmundham, Suffolk, England.] The direction and distance of flight of banded black-crowned night herons *(Nycticorax nycticorax)* are reported.--Courtesy/ Paul A. Stewart.

Miller, Frank L., and Eric Broughton. AN UNUSUAL DISPLAY OF TERRITORIAL AGGRESSIVENESS BY SANDHILL CRANES *(GRUS CANADENSIS* LINN*)*. *Canadian Field-Natur.* 85(1): 66-67. Jan.-Mar. 1971. *WR 142: 87*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: In June 1970, during a study of the causes of mortality in barren-ground caribou *(Rangifer tarandus)* calves in central Keewatin, Northwest Territories, an unusual display of territoriality was exhibited by a pair of sandhill cranes *(Grus canadensis)*. These cranes were repeatedly successful in driving a maternal caribou off their nesting territory, where her calf had died.

Nickol, Brent B., and Richard W. Heard III. *ARHYTHMORHYNCHUS FRASSONI* FROM THE CLAPPER RAIL, *RALLUS LONGIROSTRIS*, IN NORTH AMERICA. *J. Parasitol.* 56(1): 204-206. Feb. 1970. *WR 142: 87*
[Univ. Nebr., Lincoln.] Fifty-eight of 225 *Rallus longirostris* were parasitized by one to seven specimens of *A. frassoni*.

Perez, Gerald S. A. NOTES ON THE BREEDING SEASON OF GUAM RAILS *(RALLUS OWSTONI)*. *Micronesica* 4(1): 133-135, illus. 1968. [From Biol. Abstr. 52(10), 1971.] *WR 142: 88*
[Dep. Agr. Div. Fish Wildl., Agana, Guam.]

Russell, J. WOODCOCK NESTING IN HOLE IN BANK. *British Birds* 64(2): 76. Feb. 1971. *WR 142: 88*
[6 East St., Clowne, Chesterfield, Derbyshire, England.] *"Scolopax rusticola."*

Schneider, Hermann, and Peter Schneider. BESTANDAUFNAHME DES FLUSSREGENPFEIFERS *(CHARADRIUS DUBIUS)* IN NORDBAYERN. [THE LITTLE RINGED PLOVER IN NORTHERN BAVARIA.] *Anz. Ornithol. Ges. Bayern* 9(2): 105-119. 1970. [From Biol. Abstr. 52(6), 1971. In German with English summ.] *WR 142: 88*
[Adolf-Kolping-St. 264 a., Neunkirchen, Brand, Germany.]

Stephenson, James Dale. PLUMAGE DEVELOPMENT AND GROWTH OF YOUNG WHOOPING CRANES. *M.S. thesis, Oreg. State Univ.* viii + 56 p., 25 figs. June 1971. *WR 142: 88*
Plumage development and growth were studied in six young whooping cranes *(Grus americana)* from hatching until 450 days of age. The downy stage of the young cranes lasted about six weeks; the development of the juvenal plumage took until 100 days of age, and the molt to the adult or all white plumage was complete at 450 days. At one day the cranes stood 19.0 to 20.5 centimeters in height and weighed 100 to 150 grams. By 250 days they were nearing adult size and stood 112 to 127 centimeters and weighed 5,700 to 6,700 grams. The weights for each of the cranes were graphically plotted, and a logistic growth curve was determined for each individual. A mean logistic growth curve was computed from the accumulated data. Color changes of the down, contour feathers, and other body parts were noted. A key to the age identification of young whoopers (newly hatched to adult) has been developed on the basis of these measurements and observations.—From abstr.

Thomas, D. G., and A. J. Dartnall. MOULT OF THE RED-NECKED STINT. *Emu* 71 (2): 49-53, 3 figs. Apr. 1971. *WR 142: 88*
[9 Lallaby Rd., Moonah, Tasmania.] *"Calidris ruficollis."*

Van Der Straaten, J., and L. M. J. Van Den Bergh. VOORKOMEN VAN DE KWARTELKONING *(CREX CREX)* IN NEDERLAND IN 1969. [DISTRIBUTION OF THE CORNCRAKE *(CREX CREX)* IN THE NETHERLANDS IN 1969.] *Limosa* 43(3/4): 138-151. 1970. [From Biol. Abstr. 52(11), 1971. In Dutch with English summ.] *WR 142: 88*

Vermeer, Kees. LARGE AMERICAN AVOCET CLUTCHES AT DOWLING LAKE, ALBERTA. *Blue Jay* 29(2): 88. June 1971. *WR 142: 88*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] *"Recurvirostra americana."*

Veroman, Heinrich. VOM BESTAND DES WEISSSTORCHS *(C. CICONIA)* IN ESTLAND 1962 BIS 1967. [WHITE STORK *(CICONIA CICONIA)* CENSUS 1962-1967 IN ESTONIA.] *Vogelwarte* 25(3): 257-259. 1970. [From Biol. Abstr. 52(10), 1971. In German with English summ.] *WR 142: 88*
[Hariduse 3, Tartu, Estonia, SSR.]

Wolford, James W., and David A. Boag. DISTRIBUTION AND BIOLOGY OF BLACK-CROWNED NIGHT HERONS IN ALBERTA. *Canadian Field-Natur.* 85(1): 13-19, 6 figs. Jan.-Mar. 1971. *WR 142: 88*
[Univ. Alberta, Edmonton, Canada.] Abstract: Black-crowned Night Herons have expanded their range in Alberta since the first record in 1958. They have been found nesting at several locations at the latitudes of Edmonton and Calgary, primarily in emergent vegetation of marshes. Three colonies in southern Alberta were studied in 1964 and 1965. Most of the initial egg-laying took

place in late April and early May, and average initial clutch size varied from 3.2 to 4.1 eggs. Some pairs laid replacement clutches which were consistently smaller but more successful than initial clutches. The average incubation period was 23.6 days. Measurements of nestling growth are presented, and fledging required about six weeks. Production of young in both years (maximum of 1.1 fledged per pair) was insufficient for maintenance of the population. The major factor responsible for low productivity was destruction of eggs and predation on nestlings by Ring-billed Gulls.

SEABIRDS & THEIR ALLIES

Beer, C. G. ON THE RESPONSES OF LAUGHING GULL CHICKS *(LARUS ATRICILLA)* TO THE CALLS OF ADULTS / I. RECOGNITION OF THE VOICES OF THE PARENTS. *Anim. Behav.* 18(4): 652-660. 1970. *WR 142: 89*
[Rutgers Univ., Newark, N.J.] It is concluded that laughing gull chicks in nature learn to recognize the individual characteristics of the calls of their parents, and to react positively to the calls, through interaction with their parents prior to the age of 6 days post-hatching.--From summ.

Beer, C. G. ON THE RESPONSES OF LAUGHING GULL CHICKS *(LARUS ATRICILLA)* TO THE CALLS OF ADULTS / II. AGE CHANGES AND RESPONSES TO DIFFERENT TYPES OF CALL. *Anim. Behav.* 18(4): 661-677, 4 figs. 1970. *WR 142: 89*
[Rutgers Univ., Newark, N.J.] Evidence of relationships between variation in the behavior in the tests and variation in the test recordings was found from correlation analysis, the type of call initiating positive response, and analysis of temporal association. This evidence, and the results of tests which allowed responses to the parents' crooning and responses to the parents' ke-hah calls to be compared for chicks in the late group, indicate that whereas the filial approach behavior of very young chicks is stimulated by crooning but suppressed by ke-hah and long-calls, this behavior in older chicks requires the occurrence of ke-hah calls or long-calls for its elicitation. However the ke-hah calls and long-calls of adults other than the parents continue to have negative effects on the behavior of older chicks.--From summ.

Brown, D. A. BREEDING BIOLOGY OF THE SNOW PETREL *PAGODROMA NIVEA* (FORSTER). *ANARE (Aust. Nat. Antarctic Res. Exped.) Sci. Rep. Ser. B I Zool.* 89: 1-63, illus. 1966. [From Biol. Abstr. 52(2), 1971.] *WR 142: 89*
[Antarctic Div., Dep. External Affairs, Melbourne, Australia.]

Brun, Einar. DIMORPH-RATIO CLINE OF BRIDLED GUILLEMOTS *(URIA AALGE)* IN NORWAY. *Astarte* 3(1): 45-50, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 89*
[Tromso Mus., Tromso, Norway.]

Bundy, Graham. BLACK TERNS FEEDING OVER DRY LAND. *British Birds* 64(1): 32. Jan. 1971. *WR 142: 89*
[111 Porchester Rd., Woolston, Southampton, England.] *"Chlidonias niger."*

Campbell, R. Wayne. RECENT INFORMATION ON NESTING COLONIES OF MEW GULLS ON KENNEDY LAKE, VANCOUVER ISLAND, BRITISH COLUMBIA. *Syesis* 3(1/2): 5-14, illus. 1970. [From Biol. Abstr. 52(5), 1971.] *WR 142: 89*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] *"Larus canus L."*

Corkhill, Peter. CANNIBALISTIC GREAT BLACK-BACKED GULL. *British Birds* 64 (1): 30-31. Jan. 1971. *WR 142: 89*
[Skomer Island, Marloes, Haverfordwest, Pembrokeshire, England.] *"Larus marinus."*

Dasen, Catherine, and W. G. Laver. ANTIBODIES TO INFLUENZA VIRUSES (INCLUDING THE HUMAN A2/ASIAN/57 STRAIN) IN SERA FROM AUSTRALIAN SHEARWATERS *(PUFFINUS PACIFICUS)*. *Bull. WHO* 42(6): 885-889, illus. 1970. [From Biol. Abstr. 52(6), 1971. In English with French summ.] *WR 142: 90*
[Australian Nat. Univ., Canberra, Australia.]

Dungan, K. W. THE FOOD OF THE BLACK SHAG *(PHALACROCORAX CARBO NOVAEHOLLANDIAE)* IN OTAGO INLAND WATERS. *Trans. Roy. Soc. New Zealand Biol. Sci.* 11 (2): 9-23, illus. 1968. [From Biol. Abstr. 52(1), 1971.] *WR 142: 90*
[Univ. Canterbury, Christchurch, New Zealand.]

Grant, P. J., R. E. Scott, and D. I. M. Wallace. FURTHER NOTES ON THE 'PORTLANDICA' PLUMAGE PHASE OF TERNS. *British Birds* 64(1): 19-22. Jan. 1971. *WR 142: 90*
[120 Edward St., New Cross, London, England.] A *"portlandica"* type of plumage occurs in at least one of the marsh terns *Chlidonias* as well as in several species of *Sterna*.

Gregory, Philip A., and John Cantelo. SABINE'S GULL PERSISTENTLY 'TREADING' TO DISTURB ORGANISMS. *British Birds* 64(2): 76. Feb. 1971. *WR 142: 90*
[9 Thornhill Rd., Bassett, Southampton, England.] *"Larus sabini."*

Hafft, James H. J. HERRING GULL ATTACKS RARED GREBE. *Condor* 73(2): 253. Summer 1971. *WR 142: 90*
[San Francisco State Coll., San Francisco, Calif.] Courtesy/ Paul A. Stewart.

Harris, R. D. FURTHER EVIDENCE OF TREE NESTING IN THE MARBLED MURRELET. *Canadian Field-Natur.* 85(1): 67-68. Jan.-Mar. 1971. *WR 142: 90*
[Canadian Wildl. Serv., Vancouver, British Columbia, Canada.] *"Brachyramphus marmoratum."*

Houston, C. Stuart. RECENT SASKATCHEWAN BANDING OF THE DOUBLE-CRESTED CORMORANT. *Blue Jay* 29(2): 74-79, 4 figs. June 1971. *WR 142: 90*
[863 University Dr., Saskatoon, Saskatchewan, Canada.] *"Phalacrocorax auritus."*

Huizinga, Harry W. CONTRACAECIASIS IN PELICANIFORM BIRDS. *J. Wildl. Dis.* 7(3): 198-204, 6 figs. July 1971. *WR 142: 90*
[Ill. State Univ., Normal.]

King, Bernard. GREY PHALAROPE ON AUTUMN PASSAGE PLUNGING INTO WAVES. *British Birds* 64(1): 29-30. Jan. 1971. *WR 142: 90*
[Mayfield, 9 Uplands Rd., Saltford, Bristol, England.] *"Phalaropus fulicarius."*

King, Bernard. UNUSUAL 'RAIN-BATHING' BEHAVIOUR OF AN IMMATURE BLACK-HEADED GULL. *British Birds* 64(1): 32. Jan. 1971. *WR 142: 90*
[Mayfield, 9 Uplands Rd., Saltford, Bristol, England.] *"Larus ridibundus."*

Leck, Charles F. COOPERATIVE FEEDING IN *LEUCOPHOYX THULA* AND *PODILYMBUS PODICEPS* (AVES). *Amer. Midland Natur.* 86(1): 241-242. June 1971. *WR 142: 90*
[Rutgers Univ., New Brunswick, N.J.] Abstract: Cooperative feeding is described for the first time between *Leucophoyx thula* and *Podilymbus podiceps* (both water birds), with comments on the significance of such behavior.

Loehmer, Konrad, and Gottfried Vauk. EIN WEITERER BEITRAG ZUR ERNAEHRUNG HELGOLAENDER SILBERMOEWEN. *(LARUS ARGENTATUS)*. [A FURTHER CONTRIBUTION TO THE FOOD OF THE HERRING GULLS ON HELGOLAND *(LARUS ARGENTATUS)*.] *Vogelwarte* 25(3): 242-245. 1970. [From Biol. Abstr. 52(7), 1971. In German with English summ.] *WR 142: 90*
[Nr. 37, Schlessinghausen, Germany.]

Nettleship, David N. BREEDING SUCCESS OF THE COMMON PUFFIN *(FRATERCULA ARCTICA* L.*)* ON DIFFERENT HABITATS AT GREAT ISLAND, NEWFOUNDLAND. *Ph.D. thesis, McGill Univ.* 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa.] *WR 142: 91*

Norman, F. I. THE EFFECTS OF SHEEP ON THE BREEDING SUCCESS AND HABITAT OF THE SHORT-TAILED SHEARWATER, *PUFFINUS TENUIROSTRIS* (TEMMINCK). *Australian J. Zool.* 18(2): 215-229, illus. 1970. [From Biol. Abstr. 52(3), 1971.] *WR 142: 91*
[Arthur Rylah Inst. Environ. Res., Heidelberg, Australia.]

Raynor, Gilbert S. AN AFRICAN RECOVERY OF A NORTH AMERICAN COMMON TERN. *Bird-Banding* 41(4): 310-311. Oct. 1970. *WR 142: 91*
[Schultz Rd., Manorville, Long Island, N.Y.] *"Sterna hirundo."*--Courtesy/ Paul A. Stewart.

Risebrough, Robert W., Fred C. Sibley, and Monte N. Kirven. REPRODUCTIVE FAILURE OF THE BROWN PELICAN ON ANACAPA ISLAND IN 1969. *Amer. Birds* (incorporating Audubon Field Notes) 25(1): 8-9. Feb. 1971. *WR 142: 91*
[Univ. Calif., Berkeley.] "Of a minimum of 1272 nests built in 1969, only two were known to produce a single young pelican apiece."

Stranger, R. H. FEEDING OF THE SILVER GULL, *LARUS NOVAE-HOLLANDIAE*, ON THE BLOWFISH, *SPHEROIDES PLEUROGRAMMA*. *Western Australia Natur.* 11(5): 101-110. 1970. [From Biol. Abstr. 52(2), 1971.] *WR 142: 91*
[Wilson, Australia.]

Terrasse, J. F., and M. Terrasse. CONTAMINATION DE MOUETTES RIEUSES *(LARUS RIDIBUNDUS* L.*)* EN SOLOGNE PAR LES RESIDUS ORGANOCHLORES. [CONTAMINATION OF BLACK-HEADED GULLS *(LARUS RIDIBUNDUS* L.*)* IN SOLOGNE (CENTRAL FRANCE) BY ORGANOCHLORINE RESIDUES.] *Terre Vie* 1971(1): 76-85, 1 fig. Jan.-Mar. 1971. In French. *WR 142: 91*

Turner, D. A., and J. Gerhart. 'FOOT-WETTING' BY INCUBATING AFRICAN SKIMMERS *RYNCHOPS FLAVIROSTRIS*. *Ibis* 113(2): 244. Apr. 1971. *WR 142: 91*
[P.O. Box 8019, Nairobi, Kenya.]

Warham, John. BODY TEMPERATURES OF PETRELS. *Condor* 73(2): 214-219. Summer 1971. *WR 142: 91*
[Univ. Canterbury, Christchurch, New Zealand.] Courtesy/ Paul A. Stewart.

Weaver, David Kerr. PARENTAL BEHAVIOR OF THE HERRING GULL *(LARUS ARGENTATUS SMITHSONIANUS)* AND ITS EFFECT ON REPRODUCTIVE SUCCESS. *Ph.D. thesis, Univ. Mich.* 98 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 91*

Wehrlin, J., and B. Tschanz. CLIFF-RESPONSE BEI TROTTELLUMMEN *(URIA AALGE)*. [CLIFF-RESPONSE OF THE GUILLEMOT *(URIA AALGE).*] *Rev. Suisse Zool.* 76(4): 1132-1144, illus. 1969. [From Biol. Abstr. 52(11), 1971. In German with French and English summ.] *WR 142: 91*
[Univ. Berne, Berne, Switzerland.]

Wise, Edward J. GUILLEMOTS FEEDING IN FRESH WATER. *British Birds* 64(2): 77. Feb. 1971. *WR 142: 91*
[Univ. Newcastle upon Tyne, England.] *"Uria aalge."*

Zino, P. A. THE BREEDING OF CORY'S SHEARWATER *CALONECTRIS DIOMEDEA* ON THE SALVAGE ISLANDS. *Ibis* 113(2): 212-217, 2 figs. Apr. 1971. *WR 142: 91*
[Quinta da Vista Alegre, Funchal, Madeira.]

Belknap, John B. THE TURKEY VULTURE IN NEW YORK STATE. *Kingbird* 21(2): 58-59. May 1971. *WR 142: 92*
[92 Clinton St., Gouverneur, N.Y.] Records of nestings of *Cathartes aura septentrionalis* for the period 1925-1970.

Berry, Robert B. PEREGRINE FALCON POPULATION SURVEY / ASSATEAGUE ISLAND, MARYLAND / FALL, 1969. *Raptor Res. News* 5(1): 31-43. Jan.-Feb. 1971. *WR 142: 92*
[Yellow Springs Rd., Chester Springs, Pa.] Possibly 143 separate falcons were sighted, 34 of which were trapped. Trapping figures are given for the period 1959 to 1969.

Brown, Leslie H. THE RELATIONS OF THE CROWNED EAGLE *STEPHANOAETUS CORONATUS* AND SOME OF ITS PREY ANIMALS. *Ibis* 113(2): 240-243. Apr. 1971. *WR 142: 92*
[P.O. Box 24916, Karen, Kenya.]

Bundy, Graham. PEREGRINE CATCHING TERN AT SEA. *British Birds* 63(10): 427. 1970. *WR 142: 92*
[111 Porchester Rd., Woolston, Southampton, England.] *"Falco peregrinus* and *Sterna* spp."

Clark, Richard James. A FIELD STUDY OF THE SHORT-EARED OWL, *(ASIO FLAMMEUS)* PONTOPPIDAN, IN NORTH AMERICA. *Ph.D. thesis, Cornell Univ.* 209 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(12), 1971.] *WR 142: 92*

Clegg, T. M. KESTREL HIDING PREY. *Scottish Birds* 6(5): 276-277. Spring 1971. *WR 142: 92*
A freshly killed vole was concealed beneath a grass tussock.

Coulombe, Harry N. BEHAVIOR AND POPULATION ECOLOGY OF THE BURROWING OWL, *SPEOTYTO CUNICULARIA*, IN THE IMPERIAL VALLEY OF CALIFORNIA. *Condor* 73(2): 162-176, 7 figs. Summer 1971. *WR 142: 92*
[San Diego State Coll., San Diego, Calif.] Discussions of the distribution, habitat, food habits, activity patterns, and various aspects of the behavior of *Speotyto cunicularia* are presented.--Courtesy/ Paul A. Stewart.

Dunstan, Thomas Charles. POST-FLEDGING ACTIVITIES OF JUVENILE GREAT HORNED OWLS AS DETERMINED BY RADIO-TELEMETRY. *Ph.D. thesis, Univ. S. Dak.* 120 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 92*

Dunstan, Thomas C. RAPTOR RESEARCH FOUNDATION CONTINENTAL OSPREY STATUS SURVEY--1969. *Raptor Res. News* 4(3): 81-103, [4 figs.]. May-June 1970. *WR 142: 92*
[Univ. S. Dak., Vermillion.] Includes number of known nests, number of active nests, number of nests with known outcome, successful nests, young fledged, and young per successful nest for each contributing state.

Eiberle, K. ZUR WAHL DES BRUTPLATZES DURCH DEN WALDKAUZ IM LEHRREVIER DER ETH. [THE CHOICE OF BREEDING SITE BY THE FOREST OWL IN THE INSTRUCTIONAL FOREST OF THE FEDERAL TECHNICAL COLLEGE IN ZURICH.] *Schweiz. Z. Forstw.* 121 (2): 148-150. 1970. [From Biol. Abstr. 52(3), 1971. In German.] *WR 142: 92*
[Inst. Waldbau, Zurich, Switzerland.]

Eisenmann, Eugene. RANGE EXPANSION AND POPULATION INCREASE IN NORTH AND MIDDLE AMERICA OF THE WHITE-TAILED KITE *(ELANUS LEUCURUS)*. *Amer. Birds* 25(3): 529-536. June 1971. *WR 142: 92*
"By the 1960s a very great population increase and range expansion had become apparent in California....Even more startling was the extension of range (including the breeding range) through the Central American countries."

Enderson, James H. AN ACCOUNT OF PRAIRIE FALCONS BRED IN CAPTIVITY--1970. *Raptor Res. News* 5(1): 44-47. Jan.-Feb. 1971. *WR 142: 93*
[Colo. Coll., Colorado Springs.] In the spring of 1970 a pair of captive prairie falcons produced two clutches of eggs, in which 8 were fertile. Breeding and nesting facilities, incubation procedures, and raising of the young are described.

Everett, M. J. THE GOLDEN EAGLE SURVEY IN SCOTLAND IN 1964-68. *British Birds* 64(2): 49-56. Feb. 1971. *WR 142: 93*
[The Lodge, Sandy, Bedfordshire, England.] The mean rate of success over the seven areas during the five years was 0.58 young reared per breeding pair, which is exactly the same as that for all the other pairs recorded outside the survey proper. It is tentatively suggested that 0.50 young per pair may be adequate to maintain a viable adult population and that the species is currently holding its own in Scotland. Eggs collected under license during the survey were analyzed for toxic chemical residues and the results are briefly discussed. Other reasons for breeding failure were difficult to ascertain in the samples covered, but human disturbance is clearly important: details are given to show that this was a factor in 45% of losses in the survey itself and in 50% of all failures.--From summ.

Fairley, J. S., and F. L. Clark. BARN OWL PELLETS FROM CO. GALWAY. *British Birds* 64(1): 34. Jan. 1971. *WR 142: 93*
[Univ. Coll., Galway, Ireland.] *"Tyto alba."*

Haukioja, Erkki, and Markku Haukioja. KANAHAUKKAKANNAN VEROTTAMINEN JA SEN MERKITYS. [ASSESSMENT OF THE GOSHAWK *(ACCIPITER GENTILIS)* POPULATION AND ITS INFLUENCE IN FINLAND.] *Suomen Riista* 23: 17-22, 2 figs. 1971. In Finnish with English summ. *WR 142: 93*

Herren, Hans. THE EUROPEAN SPARROW-HAWK--BREEDING IN CAPTIVITY. *Raptor Res. News* 4(2): 60-67. Mar.-Apr. 1970. *WR 142: 93*
[Winterfeldweg 41, 3018 Berne, Switzerland.] *"Accipiter nisus."*

Janossy, D., and E. Schmidt. DIE NAHRUNG DES UHUS *(BUBO BUBO)*: REGIONALE UND ERDZEITLICHE AENDERUNGEN. [THE FOOD OF THE EAGLE OWL *(BUBO BUBO)*: REGIONAL AND DEVELOPMENTAL CHANGES.] *Bonn. Zool. Beitr.* 21(1/2): 25-51. 1970. [From Biol. Abstr. 52(12), 1971. In German.] *WR 142: 93*

Kent, David. A PROGRAMME FOR BREEDING GOSHAWKS *(ACCIPITER GENTILIS GENTILIS)* IN CAPTIVITY WITH REFERENCE TO THEIR BREEDING HABITS IN THE WILD STATE. *Raptor Res. News* 4(3): 104-107. May-June 1970. *WR 142: 93*
[13, Achnamara, Lochgilphead, Argyle, Scotland.]

Kuhk, Rudolf. WEITERES ÜBER BRUTEN DES WANDERFALKEN *(FALCO PEREGRINUS)* AN MENSCHLICHEN BAUWERKEN. [MORE ABOUT PEREGRINE NESTS ON MAN-MADE STRUCTURES.] *Deut. Falkenorden* 1968: 65-66. 1969. [From Bird-Banding 42(1), 1971. In German.] *WR 142: 93*

Maclean, G. L. THE PYGMY FALCON *POLIHIERAX SEMITORQUATUS*. *Koedoe* no. 13. p. 1-21, 5 figs. 1970. *WR 142: 93*
[Univ. Natal, Pietermaritzburg, South Africa.] The pygmy falcon *Polihierax semitorquatus* is a small raptor of discontinuous distribution in Africa, with one subspecies in the drier parts of southern Africa and another widely separated subspecies in the drier parts of East Africa. The range of the southern population coincides with the range of the sociable weaver *Philetairus socius* in whose communal nest masses the pygmy falcons roost throughout the year and breed in summer from August to March. The food of the pygmy falcon consists largely of insects, but also of lizards, small rodents, and small birds. The falcons feed to some extent on the sociable weaver. The clutch consists of two to four eggs, usually three. The main cause of non-hatching of eggs is

infertility. Survival of nestlings is high. It is possible that the falcons keep snakes from the weaver nest masses, so that the two bird species are mutually beneficial. Pygmy falcons may be double-brooded in a single season. Calls and displays are described and interpreted where possible. Other behavior patterns are fairly typically falconid.--From summ.

Maser, Chris, E. Wayne Hammer, and Stanley H. Anderson. COMPARATIVE FOOD HABITS OF THREE OWL SPECIES IN CENTRAL OREGON. *Murrelet* 51(3): 29-33. Sept.-Dec. 1970. *WR 142: 94*

[Univ. Puget Sound, Takoma, Wash.] Pellets of three owl species were analyzed. The great horned owl *Bubo virginianus* had the most varied winter diet; however, its summer diet was mainly rabbits and hares. The long-eared owl *Asio otus* fed primarily on pocket mice throughout the year (58.2% of its total diet). The deer mouse ranked second on a yearly basis, but was much less significant during the summer. The winter diet of the short-eared owl *Asio flammeus* was principally pocket mice, followed closely by deer mice; during the summer, the pocket gopher was most important, the pocket mouse second, and the deer mouse ranked only sixth.--From abstr.

McKinlay, S. L. FEEDING BEHAVIOUR OF GOLDEN EAGLE. *Scottish Birds* 6(5): 275-276. Spring 1971. *WR 142: 94*

The eagle ate one rabbit and left another.

Mebs, Theodor. WANDERFALKENBRUTEN AN MENSCHLICHEN BAUWERKEN. [PEREGRINE NESTS ON MAN-MADE STRUCTURES.] *Deut. Falkenorden* 1968: 55-65. 1969. [From Bird-Banding 42(1), 1971. In German.] *WR 142: 94*

Mebs, Theodor, and Helmut Link. ZUR SIEDLUNGSDICHTE UND BRUTBIOLOGIE DES WESPENBUSSARDS *(PERNIS APIVORUS)* IN EINEM FRANCKISCHEN BEOBACHTUNGSGEBIET. [POPULATION DENSITY AND BREEDING BIOLOGY OF THE HONEY BUZZARD IN A STUDY AREA IN FRANCONIA.] *Deut. Falkenorden* 1968: 47-53. 1969. [From Bird-Banding 42(1), 1971.] *WR 142: 94*

Nelson, R. Wayne. CAPTIVE BREEDING OF PEREGRINES: SUGGESTIONS FROM THEIR BEHAVIOUR IN THE WILD. *Raptor Res. News* 5(2): 54-82. Mar.-Apr. 1971. *WR 142: 94*

[Univ. Calgary, Calgary, Alberta, Canada.] Falcons which have bred successfully in captivity apparently either represent a tolerant extreme of the species or are subjected to certain specific conditions conducive to breeding. By using the behavior of birds in the wild as a guide, the captive breeder can greatly improve the chances of success. Photoperiodicity, breeding quarters, methods of presenting food, placement of ledges and perches, isolation from disturbances, and avoidance of human intrusion appear to be major factors in stimulating breeding activity.--From summ.

Ohlendorf, Harry M. ARTHROPOD DIET OF A WESTERN HORNED OWL. *Southwestern Natur.* 16(1): 124-125. 23 July 1971. *WR 142: 94*

[Tex. A&M Univ., College Station.]

Olendorff, Richard R. FALCONIFORM REPRODUCTION; A REVIEW. PART 1. THE PRE-NESTLING PERIOD. *Raptor Res. Foundation Raptor Res. Rep.* no. 1. 111 p. Feb. 1971. Available from the Raptor Research Foundation, Univ. S. Dak., Vermillion, at $2.00 for members and $2.50 for all others. *WR 142: 94*

Anatomy and morphology, territory, breeding cycle, nesting success, pre-incubation behavior, nests and nesting, eggs and egg-laying, incubation, and hatching of falconiforms are the major topics of discussion.

Schaefer, H. WOMIT ERNAEHRT DER UHU *(BUBO BUBO)* IN LAPPLAND SEINE JUNGEN? [WITH WHAT DOES THE EAGLE OWL *(BUBO BUBO)* FEED ITS YOUNG IN LAPLAND?] *Bonn. Zool. Beitr.* 21(1/2): 52-62, illus. 1970. [From Biol. Abstr. 52(12), 1971. In German.] *WR 142: 94*

Seidensticker, John C. IV. FOOD OF NESTING RED-TAILED HAWKS IN SOUTH-CENTRAL MONTANA. *Murrelet* 51(3): 38-40. Sept.-Dec. 1970. *WR 142: 95*
[Univ. Idaho, Moscow.] Nestling red-tailed hawks are fed no fewer than 28 spp. of mammals, birds, reptiles, and fish in south-central Montana. Mammals comprised 70% of 261 prey items. Richardson's ground squirrels, cottontail rabbits, and voles made up 65% of all items recorded.

Shor, Williston. PEREGRINE FALCON POPULATION DYNAMICS DEDUCED FROM BAND RECOVERY DATA. *Raptor Res. News* 4(2): 49-59. Mar.-Apr. 1970. *WR 142: 95*
[6614 32nd St., N.W., Washington, D.C.] The probability is 0.95 that the studied population consists of at least 1000 adults, and is 0.5 that the population contains 4500 adults. Regulating the harvest of these birds on the basis of an assumed production of 500 immature birds per year should be a conservative approach.--From summ.

Southern, H. N. THE NATURAL CONTROL OF A POPULATION OF TAWNY OWLS *(STRIX ALUCO)*. *J. Zool.* (London) 162(2): 197-285, illus. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 95*
[Bur. Anim. Pop., Oxford, England.]

Spofford, Walter R. THE BREEDING STATUS OF THE GOLDEN EAGLE IN THE APPALACHIANS. *Amer. Birds* (incorporating Audubon Field Notes) 25(1): 3-7, illus. Feb. 1971. *WR 142: 95*
[Aviana, Etna, N.Y.] Observations on golden eagle nesting attempts during the last two decades. Eight sites in New York, Maine, and New Hampshire have produced 12 young in 20 years.

Terrasse, Jean-Francois. TECHNIQUES DE CHASSE DE FAUCON PELERIN *(FALCO PEREGRINUS)* ET EDUCATION DES JEUNES. [HUNTING TECHNIQUES OF THE PEREGRINE FALCON *(FALCO PEREGRINUS)* AND THE EDUCATION OF ITS YOUNG.] *Alauda* 38(3): 186-190. 1970. [From Biol. Abstr. 52(12), 1971. In French.] *WR 142: 95*

Thiollay, J.-M. OBSERVATIONS SUR L'ÉCOLOGIE D'UNE POPULATION DE BUSARDS DES ROSEAUX *CIRCUS AERUGINOSUS* EN CAMARGUE. [OBSERVATIONS CONCERNING THE ECOLOGY OF A POPULATION OF MARSH HARRIERS *CIRCUS AERUGINOSUS* IN THE CAMARGUE REGION (FRANCE).] *Nos Oiseaux Bull. Soc. Romande Etude Protect. Oiseaux* 30 (329/330): 214-229, illus. 1970. [From Biol. Abstr. 52(1), 1971. In French.] *WR 142: 95*
[19 rue Jean-Mermoz, Viroflay, France.]

Thomsen, Lise. BEHAVIOR AND ECOLOGY OF BURROWING OWLS ON THE OAKLAND MUNICIPAL AIRPORT. *Condor* 73(2): 177-192, 2 figs. Summer 1971. *WR 142: 95*
[Mus. Vertebrate Zool., Berkeley, Calif.] Burrows, population movements, activity, food habits, sexual dimorphism, communications, courtship and pair formation, territoriality, reproduction, mortality and survival, dispersal, and plumage and molt of *Speotyto cunicularia* are discussed.--Courtesy/ Paul A. Stewart.

Tomich, P. Quentin. NOTES ON FOODS AND FEEDING BEHAVIOR OF RAPTORIAL BIRDS IN HAWAII. *Elepaio* 31(12); 111-114. June 1971. *WR 142: 95*
"Buteo solitarius, Asio flammeus, and *Tyto alba."*

Wagner, G., M. Springer, R. Melcher, and E. Sutter. ZUR ERNÄHRUNG DES UHUS *BUBO BUBO* IM OBERENGADIN. [ON THE FEEDING OF THE EAGLE OWL *BUBO BUBO* IN OBERENGADIN (SWITZERLAND).] *Ornithol. Beob.* 67(3): 77-94. 1970. [From Biol. Abstr. 52(10), 1971. In German.] *WR 142: 95*
[3045 Meikirch BE, Zurich, Switzerland.]

Bastian, Chris W., and David Hothersall. OPERANT CONDITIONING IN REDWINGED BLACKBIRDS. *J. Exp. Anal. Behav.* 14(2): 241-246, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 96*
[Ohio State Univ. Res. Center, Columbus, Ohio.]

Burkholder, Timothy Jay. THE RELATION OF SERUM CALCIUM LEVELS TO THE REPRODUCTIVE CYCLE, EGG PRODUCTION, EGGSHELL THICKNESS, HATCHABILITY, SOIL CALCIUM, AND GROWTH OF THE RED-WINGED BLACKBIRD, *(AGELAIUS PHOENICEUS). Ph.D. thesis, Ohio State Univ.* 96 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(10), 1971.] *WR 142: 96*
This investigation provided some evidence that thyroxin, which is known to be involved in the molting process, may have a depressing action on serum calcium levels. There was a detectable difference in serum calcium levels between molting and non-molting adult red-wings. The difference was negligible in juvenile birds.--From abstr.

Burtt, Harold E., and Maurice L. Giltz. A STUDY OF BLACKBIRD REPEATS AT A DECOY TRAP. *Ohio J. Sci.* 70(3): 162-170, illus. 1970. [From Biol. Abstr. 52(1), 1971.] *WR 142: 96*
[Ohio State Univ., Columbus.]

Croze, Harvey. SEARCHING IMAGE IN CARRION CROWS: HUNTING STRATEGY IN A PREDATOR AND SOME ANTI-PREDATOR DEVICES IN CAMOUFLAGED PREY. *Beiheft zur Zeitschrift fur Tierpsychologie* no. 5. 85 p., illus. 1970. Price DM 39.60. [From Biol. Abstr. 52(4), 1971. In English with German summ.] *WR 142: 96*

De Grazio, John W., Jerome F. Besser, Thomas J. DeCino, Joseph L. Guarino, and Robert I. Starr. USE OF 4-AMINOPYRIDINE TO PROTECT RIPENING CORN FROM BLACKBIRDS. *J. Wildl. Mgmt.* 35(3): 565-569, 1 fig. July 1971. *WR 142: 96*
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: A toxic, fright-producing chemical, 4-aminopyridine, was tested for alleviating damage by red-winged blackbirds *(Agelaius phoeniceus)* to ripening corn in Brown County, South Dakota. The treatment reduced losses by about 70% in 8 contiguous sections containing 1,013 acres of corn. Numbers of blackbirds using the treated area fell sharply during a 5-day period after treatment began and remained at a low level for the remainder of the damage season. The technique was highly specific for blackbirds. Although pheasants *(Phasianus colchicus)* were abundant, there was no evidence that any were affected, and mortality among other species of birds was negligible.

Dolbyk, M. S., and Yu. A. Vyazovich. [FEATURES OF THE GEOGRAPHIC DISTRIBUTION OF THE ROOK IN BELORUSSIA AND FACTORS DETERMINING IT.] *Vyestsi Akad. Navuk Byelarus. SSR Syer. Biyal. Navuk* 3: 104-110, illus. 1970. [From Biol. Abstr. 52(3), 1971. In Belorussian with Russian summ.] *WR 142: 96*

Durrer, H., and W. Villiger. SCHILLERFARBEN DER STARE (STURNIDAE) ELEKTRONENMIKROSKOPISCHER BEITRAG ZUR FAERBUNG UND SYSTEMATIK DER FAMILIE. [IRIDESCENT COLORS OF THE STARLING (STURNIDAE). ELECTRON MICROSCOPIC DATA ON THE COLORATION AND SYSTEMATICS OF THE FAMILY.] *J. Ornithol.* 111(2): 133-153, illus. 1970. [From Biol. Abstr. 52(6), 1971. In German with English summ.] *WR 142: 96*

Eigelis, Yu. K. [CHARACTERISTICS OF REPRODUCTION OF *GARRULUS GLANDARIUS* (PASSERIFORMES, CORVIDAE) IN THE FOREST-STEPPE ZONE OF THE EUROPEAN PART OF THE USSR.] *Zool. Zh.* 49(6): 892-897. 1970. [From Biol. Abstr. 52(1), 1971. In Russian with English summ.] *WR 142: 96*

Helmboldt, C. F., R. P. Eckerlin, L. R. Penner, and D. S. Wyand. THE PATHOLOGY OF CAPILLARIASIS IN THE BLUE JAY. *J. Wildl. Dis.* 7(3): 157-161, 5 figs. July 1971. *WR 142: 96*
[Univ. Conn., Storrs.] Abstract: *Capillaria contorta* (Creplin, 1839) caused a diphtheritic membrane to form in the oral cavity and esophagus of blue jays *(Cyanocitta cristata).*

Hobbs, J. N. USE OF TOOLS BY THE WHITE-WINGED CHOUGH. *Emu* 71(2): 84-85. Apr. 1971. *WR 142: 97*
[135 Lurline St., Katoomba, New South Wales, Australia.] *"Corcorax melanorhamphus."*

Jackson, Jerome A. SPOTTED EGGS IN A LOCAL POPULATION OF STARLINGS. *Bird-Banding* 41(4): 308-310. Oct. 1970. *WR 142: 97*
[Miss. State Univ., State College.] Five clutches of spotted eggs of starlings *(Sturnus vulgaris)* were found near Lawrence, Kansas.--Courtesy/ Paul A. Stewart.

Kalchreuter, Heribert. RINGFUNDERGEBNISSE BEI DER RABENKRAEHE *(CORVUS CORONE CORONE).* [RESULTS OF BANDING CARRION CROWS *(CORVUS CORONE CORONE).*] *Vogelwarte* 25(3): 245-255, illus. 1970. [From Biol. Abstr. 52(7), 1971. In German with English summ.] *WR 142: 97*
[P. Guendelwangen, Glashuette, Germany.]

Kislenko, G. S. [THE HARMFUL ACTIVITY OF THE CARRION CROW *(CORVUS CORONE ORIENTALIS)* IN THE LOWER SYRDARYA FLOW.] *Zool. Zh.* 49(9): 1419-1420. 1970. [From Biol. Abstr. 52(8), 1971. In Russian with English summ.] *WR 142: 97*
[N. K. Krupskoi Pedagog. Inst., Moscow, USSR.]

Ligon, J. David. LATE SUMMER-AUTUMNAL BREEDING OF THE PIÑON JAY IN NEW MEXICO. *Condor* 73(2): 147-153, 2 figs. Summer 1971. *WR 142: 97*
[Univ. N. Mex., Albuquerque.] Breeding biology of the piñon jay *(Gymnorhinus cyanocephalus)* in southwestern New Mexico appears similar to that of the red crossbill *(Loxia curvirostra)* of North America in that breeding may occur irregularly in response to certain environmental cues; namely food, and is little influenced by climatic conditions per se, occurring at the same site in February or August.--From summ. Courtesy/ Paul A. Stewart.

Martin, Stephen George. POLYGYNY IN THE BOBOLINK: HABITAT QUALITY AND THE ADAPTIVE COMPLEX. *Ph.D. thesis, Oreg. State Univ.* 203 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 97*
"Dolichonyx oryzivorus."

Maxwell, George R. II. PAIR FORMATION, NEST BUILDING, AND EGG LAYING OF THE COMMON GRACKLE IN NORTHERN OHIO. *Ohio J. Sci.* 70(5): 284-291. 1970. [From Biol. Abstr. 52(8), 1971.] *WR 142: 97*
[State Univ. Coll., Oswego, N.Y.]

Radford, A. P. CARRION CROW STOOPING AT SWALLOWS. *British Birds* 63(10): 428-429. 1970. *WR 142: 97*
[2 Wyck Beck Rd., Brentry, Bristol, England.]

Schafer, Edward W., Jr., and Ronald B. Brunton. CHEMICALS AS BIRD REPELLENTS: TWO PROMISING AGENTS. *J. Wildl. Mgmt.* 35(3): 569-572. July 1971. *WR 142: 97*
[Federal Center, Denver, Colo.] Abstract: Of 724 chemicals screened as repellents for red-winged blackbirds *(Agelaius phoeniceus)*, only 6 satisfied criteria for high repellency and low toxicity. Of these, 4-methylthio-3,5-xylyl *N*-methylcarbamate (methiocarb) and 2-methyl-α,α-diphenyl-1-pyrrolidinebutyramide (DRC 3324) were consistently effective against house sparrows *(Passer domesticus)*, grackles *(Quiscalus quiscula)*, pheasants *(Phasianus colchicus)*, tricolored blackbirds *(Agelaius tricolor)*, brown-headed cowbirds *(Molothrus ater)*, and California quail *(Lophortyx californicus)*.

Verheyen, R. F. NOTE SUR DES ACTOGRAPHES PERFECTIONNÉS. [COMMUNICATION ON IMPROVED AUTOMATIC NEST-RECORDERS *(STURNUS VULGARIS).*] *Gerfaut* 60(1): 41-48. 1970. [From Biol. Abstr. 52(5), 1971. In German with Flemish and English summ.] *WR 142: 97*
[Inst. Royal Sci. Natur. Belgium, Brussels, Belgium.]

Voipio, Paavo. GEOGRAPHICAL VARIATION IN *CORVUS MONEDULA* IN FINLAND. *Ardea* 57(1/2): 48-63. 1969. [From Biol. Abstr. 52(5), 1971. In English with Dutch summ.] *WR 142: 98*
[Turku Univ., Turku, Finland.]

Westcott, Peter Walter. ECOLOGY AND BEHAVIOR OF THE FLORIDA SCRUB JAY. *Univ. Fla.* 94 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 32(1), 1971.] *WR 142: 98*
"Aphelocoma c. coerulescens."

OTHER BIRDS

Alcock, John. PUNISHMENT LEVELS AND THE RESPONSE OF WHITE-THROATED SPARROWS *(ZONOTRICHIA ALBICOLLIS)* TO THREE KINDS OF ARTIFICIAL MODELS AND MIMICS. *Anim. Behav.* 18(4): 733-739, 1 fig. 1970. *WR 142: 98*
[Univ. Wash., Seattle.]

Appert, O. ZUR BIOLOGIE DER VANGAWÜRGER (VANGIDAE) SÜDWEST-MADAGASKARS. [ON THE BIOLOGY OF THE VANGA SHRIKES (VANGIDAE) OF SOUTHWESTERN MADAGASCAR.] *Ornithol. Beob.* 67(3): 101-133, illus. 1970. [From Biol. Abstr. 52(3), 1971. In German with French summ.] *WR 142: 98*
[Seminar, Werthenstein, Switzerland.]

Belhache, J. PRÉCISIONS SUR CERTAINS ASPECTS DE LA BIOLOGIE DE LA MÉSANGE À LONGUE QUEUE *(AEGITHALOS CAUDATUS* L.*).* [DETAILS ON CERTAIN ASPECTS OF THE BIOLOGY OF THE LONG-TAILED TIT *(AEGITHALOS CAUDATUS* L.*).*] *Alauda* 38(2): 150-156, illus. 1970. [From Biol. Abstr. 52(4), 1971. In French.] *WR 142: 98*

Beregovoi, V. E. [SOME POPULATION CHARACTERISTICS OF *MOTACILLA FLAVA* POPULATIONS FROM NORTH AND SOUTH URALS, UPPER PARTS OF IRTYSH RIVER AND ZAISSAN LAKE.] *Zool. Zh.* 49(6): 898-902, illus. 1970. [From Biol. Abstr. 52(1), 1971. In Russian with English summ.] *WR 142: 98*
[Inst. Plant Anim. Ecol., Ural Br. Acad. Sci. USSR, Sverdlovsk, USSR.]

Blankespoor, Gilbert Wayne. THE SIGNIFICANCE OF NEST AND NEST SITE MICROCLIMATE FOR THE DICKCISSEL, *SPIZA AMERICANA. Ph.D. thesis, Kans. State Univ.* 190 p. 1970. [From Diss. Abstr. Int. B Sci. Eng. 31(11), 1971.] *WR 142: 98*

Bolotnikov, A. M., and V. K. Korolev. [THE BROODING TEMPERATURE IN THE SAND MARTIN.] *Uch. Zap. Perm. Gos. Pedagog. Inst.* 69: 43-49. 1969. [From Biol. Abstr. 52(8), 1971, from Referat. Zh., Biol., 1970, no. 7I480. In Russian.] *WR 142: 98*

Chatfield, David G. P. ABNORMALLY PLUMAGED GREEN WOODPECKER. *British Birds* 63(10): 429. 1970. *WR 142: 98*
[3 Cyncoed Close, Dunvant, Swansea, Glamorgan, Wales.] *"Picus viridis."*

Crocq, C. NOTES SUR LA NIDIFICATION DE *NUCIFRAGE CARYOCATACTES* ET DECOUVERTE D'UN NID DANS LA REGION DE GUILLESTRE. [NOTES ON THE NEST BUILDING OF *NUCIFRAGA CARYOCATACTES* AND DISCOVERY OF A NEST IN THE REGION OF GUILLESTRE (FRENCH ALPS).] *Alauda* 38(3): 165-168, illus. 1970. [From Biol. Abstr. 52(12), 1971. In French.] *WR 142: 98*

Davis, John. BREEDING AND MOLT SCHEDULES OF THE RUFOUS-COLLARED SPARROW IN COASTAL PERÚ. *Condor* 73(2): 127-146, 10 figs. Summer. 1971. *WR 142: 98*
[Univ. Calif., Carmel Valley.] Male cycle, female cycle, age of breeding, singing and flocking behavior, molt, food habits, and proximate and ultimate factors in the annual cycle of *Zonotrichia capensis.* Courtesy/ Paul A. Stewart.

Dinsmore, James J. HISTORY AND NATURAL HISTORY OF *PARADISAEA APODA* ON LITTLE TOBAGO ISLAND, WEST INDIES. *Caribbean J. Sci.* 10(1/2): 93-100. 1970. [From Biol. Abstr. 52(7), 1971.] *WR 142: 99*
[Univ. Fla., Gainesville.]

Erard, Christian. L'IRRUPTION DE CASSENOIX MOUCHETÉS *(NUCIFRAGA CARYOCATACTES* (L.)) EN FRANCE DURAT LES ANNEES 1968-69. [THE IRRUPTION OF THE MOTTLED NUTCRACKER *(NUCIFRAGA CARYOCATACTES* (L.)) INTO FRANCE DURING THE YEARS 1968-69.] *Alauda* 38(1): 1-26. 1970. [From Biol. Abstr. 52(2), 1971. In French.] *WR 142: 99*

Evans, S. M. SOME FACTORS AFFECTING THE FLOCK BEHAVIOUR OF RED AVADAVATS *(AMANDAVA AMANDAVA)* WITH PARTICULAR REFERENCE TO CLUMPING. *Anim. Behav.* 18(4): 762-767, 4 figs. 1970. *WR 142: 99*
[Univ. Newcastle, Newcastle-upon-Tyne, England.]

Fitter, R. S. R. BLACK REDSTARTS BREEDING IN BRITAIN IN 1964-68. *British Birds* 64(3): 117-124, 2 figs. Mar. 1971. *WR 142: 99*
[Drifts, Chinnor Hill, Oxford, England.] Summary of breeding records of *Phoenicurus ochruros* for the period compared with earlier records.

Freeman, D. J. THE NEST OF THE WHITE-LINED HONEYEATER. *Emu* 171(2): 86-87, 1 fig. Summer 1971. *WR 142: 99*
[British Mus. (Natur. Hist.), Cromwell Rd., London, England.] *"Meliphaga albilineata."*

Glayre, Daniel. UNE COLONIE DE MOINEAUX SOULCIES SUR LE CAUSSE MÉJEAN. [A COLONY OF ROCK SPARROWS *(PETRONIA PETRONIA)* ON THE CAUSSE MEJEAN PLATEAU (LOZERE DEPARTMENT, FRANCE).] *Nos Oiseaux Bull. Soc. Romande Etude Protect. Oiseaux* 30(329/330): 229-234, illus. 1970. [From Biol. Abstr. 52(1), 1971. In French.] *WR 142: 99*

Harris, M. P. FACTORS INFLUENCING THE BREEDING CYCLE OF THE RED-BILLED TROPICBIRD IN THE GALAPAGOS ISLANDS. *Ardea* 57(4): 149-157, illus. 1969. [From Biol. Abstr. 52(9), 1971. In English with Dutch summ.] *WR 142: 99*
[Edward Grey Inst., Oxford, England.]

Haukioja, Erkki. CLUTCH SIZE OF THE REED BUNTING *EMBERIZA SCHOENICLUS*. *Ornis Fenn.* 47(3): 101-135. 1970. [From Biol. Abstr. 52(10), 1971. In English with Finnish summ.] *WR 142: 99*
[Univ. Turku, Turku, Finland.]

Hogstad, Olav. ON THE ECOLOGY OF THE THREE-TOED WOODPECKER *PICOIDES TRIDACTYLUS* (L.) OUTSIDE THE BREEDING SEASON. *Nytt Mag. Zool.* 18(2): 221-227, illus. 1970. [From Biol. Abstr. 52(6), 1971.] *WR 142: 99*
[Univ. Oslo, Oslo, Norway.]

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[Ill. State Univ., Normal.] *"Splendidofilaria passerina* in *Passer domesticus."*

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[Southern Ill. Univ., Carbondale.] Abstract: In 4 years 130 postmetamorphic *T. spelaeus* were collected systematically from one cave in southeastern Missouri. From these, and others observed but not collected, information was obtained on the reproduction, seasonal abundance and feeding habits of this troglobitic salamander. Peak abundance was in the spring and summer (April-July) when rock walls were wettest, food organisms most abundant and feeding success of salamanders greatest, and when courtship and insemination apparently occurred. Comparison is made to specimens and data reported by Hendricks and Kezer (1958) from a cave in Laclede Co., Mo.

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[Southern Ill. Univ., Carbondale.] Abstract: Individuals of *Desmognathus monticola* and *Desmognathus quadramaculatus* inhabiting the rocky bank of a mountain stream were captured, marked, released at the point of capture, and their locations were noted. *Desmognathus monticola* was approximately twice as abundant as *Desmognathus quadramaculatus* and more uniformly distributed. The latter species was restricted to areas near the water. Two types of behavior were observed: (1) wandering over the surface; (2) occupation of cracks and crevices even during twilight and nocturnal activity. Juveniles showed only Type 1 behavior. Larger individuals showed both types with evidence of intense interspecific and intraspecific competition for favorable hiding-hunting sites in cracks and crevices.

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[Ill. State Univ., Normal.] *"Bufo valliceps* X *B. woodhousei."*

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[Ill. State Univ., Normal.] Abstract: Survival of adult male *Bufo woodhousei* X *Bufo valliceps* natural hybrids was intermediate between the parental species at a fish hatchery in Austin, Texas. This was in contrast to the survival of *B. woodhousei* X *B. valliceps* hybrids in Louisiana (Volpe, 1960) which was greater than the parental species.

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[Univ. Kans., Lawrence.]

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[Southwest Minn. State Coll., Marshall.] Abstract: Growth of the turtle, *Chrysemys picta*, was studied in southeastern Pennsylvania. Growth is most rapid in juveniles and slows appreciably in adults. First year turtles ranged to 45 mm, second year to 60 mm, third year to 75 mm, and fourth year to 90 mm. Growth is initiated in hatchlings as soon as the shell shape is set and they start to feed. Growth in the first season depends on the date of hatching. Hatchlings which overwintered and emerged the following spring and early summer grew larger due to the longer season. The usual growth period in southeastern Pennsylvania is from 1 June until 31 August, or 92 days, and is limited by water temperature, amount of rainfall, and availability of food. Painted turtles annually shed their shell laminae. Juveniles start ecdysis in late June and are finished by mid-August. Adults start in the beginning of July, and ecdysis may be prolonged until autumn. There is no pattern to the ecdysis. Ecdysis is delayed and prolonged in turtles kept continually in water and not allowed to bask.

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[Kans. State Univ., Manhattan.] Abstract: Sagebrush lizards *(Sceloporus graciosus)* were more wary and less prone to climb trees than fence lizards *(Sceloporus undulatus)*. Males of both species were considerably more active than females in May. The evidence for species discrimination by the males was inconclusive, but males never confused the sex of a conspecific, and both sexes showed some ability to distinguish individual mates. Males courted females and defended territories both during and after the reproductive season. Mates may form long-term pair bonds. Some males of both species were polygynous; others monogamous. Frequency of assertion displays was correlated with distance traveled. Push-up displays of the two species were distinct.

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[Max-Planck-Inst. Verhaltensphysiol., Seewiesen, Germany.]

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[Kyoto Univ. Educ., Kyoto, Japan.]

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[Duke Univ., Durham, N.C.] Abstract: The critical thermal maxima for two spring-breeding ambystomatids, *Ambystoma jeffersonianum* and *Ambystoma maculatum*, were determined to be 34.04 C (SE = 0.06 C) and 34.85 C (SE = 0.17 C) respectively. The former breeds earlier than the latter and has a lower CTM. Order of breeding and thermal tolerances of anurans present at a pond in Pennsylvania showed this same correlation.

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[Catholic Univ., Nijmegen, Netherlands.]

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[Whittier Coll., Whittier, Calif.] Abstract: *Sceloporus jarrovi*, at elevations of 5000-7000 ft in southeastern Arizona, undergo a seasonal reproductive cycle in which young are born in late June after a gestational period of about 6.5 months. Testes are at maximum sizes in early fall when mating takes place. Ovulation and fertilization occur in late November to early December. Embryonic development is suspended at the blastoderm stage for 4 months until the end of March. Placental formation and rapid embryonic development commence in April with young born about 10 weeks later. Delayed development ensures an adequate food supply for the young at parturition and eliminates embryonic development during winter when adult food intake is limited.

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[Univ. Fla., Gainesville.] Abstract: Prey movement is necessary to elicit a feeding response in *Anolis polylepis*, a terrestrial lizard, but not necessary for the riparian species, *Anolis aquaticus*.

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[Savannah River Ecol. Lab., P.O. Drawer E, Aiken, S.C.]

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[Xavier Univ., Cincinnati, Ohio.] Abstract: *Rana septentrionalis* in Hubbard and Clearwater counties, Minnesota, typically has a one-year larval period. Some individuals may spend an additional year in the tadpole stage. The tadpoles show a marked reduction in growth during the winter months. Metamorphosis occurs during July and August at body lengths ranging from 32.8-41.9 mm ($\bar{x}$ = 37.2 mm).

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[Bur. Sport Fisheries & Wildl., Sanibel, Fla.] Abstract: Information on multiple laying, the internesting interval, and the relationship of these behavioral patterns to egg production and clutch size in the loggerhead turtles, *Caretta caretta caretta* (Linne), occurring off the southwest Florida coast is discussed for the first time. Data reveal that this population is similar in reproductive behavior to Atlantic Coast *Caretta*; however, slight differences have been detected.

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[Univ. Calif., Riverside.] Abstract: Both sexes of *Dipsosaurus dorsalis* from several locations in southern California were autopsied each month during their active period from August 1958 through May 1963, and the breeding cycle

was determined. The majority was captured from April 1959 through September 1962. Most individuals appeared to reach reproductive maturity during the fifth summer or later. Adult testis volumes changed markedly during the year, generally reaching maximum size in May. Males were found as potential breeders from mid-April until near the end of July. Present evidence indicates that male breeding cycles can be determined rather precisely by examining either testes volumes, the vas deferens, or the histology of the testes. Seasonal changes in the histological morphology of the testes were observed. A series of eight stages, indicating these changes in spermatogenic activity, is described. These stages arbitrarily divide a continuous process into several recognizable stages. The testes appeared to function during July, the hottest month of the year. Possible explanations for this ability are suggested. Females contained oviducal eggs from early June until the middle of August. Presumably only one clutch of eggs a year is laid by most females in southern California. Inconclusive evidence suggested that slight variations in reproductive cycles occur in any one region from year to year and that similar variations may occur in different populations during the same season. Eggs required about 75 days for incubation in the field. Young lizards first appeared in August. The data suggest that female abdominal fat bodies contribute fat to developing ova during the breeding season.

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[Univ. Kans., Lawrence.] Abstract: The reticulate collared lizard, *Crotaphytus reticulatus* Baird, inhabits the thorn brush desert of the Tamaulipan biotic province of southern Texas and adjacent México. The species is wary, habitually seeking refuge in brush piles, *Opuntia* thickets, pack rat nests, or in rodent burrows. Diel activity follows a general pattern which begins with early morning basking, followed by prey searching, intensive sunning activity, retreat during extreme temperatures, and re-emergence for afternoon basking and limited foraging until dusk. Seasonal activity may start as early as 8 February; the latest seasonal record is for 22 September. Winter dormancy may occur in relatively shallow retreats. Mating takes place between mid-April and early June. There is evidence for two clutches of eggs during the season. Mean clutch size is 9.8 eggs. Hatchlings have an average snout-vent length of 35.3 mm. Food consists chiefly of grasshoppers as well as insects associated with the blooms of perennial shrubs. Smaller lizards and snakes are also eaten.

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[Univ. Toronto, Toronto, Ontario, Canada.] Summary: Hatchling sea turtles, *Chelonia mydas* and *Eretmochelys imbricata*, reacted to the position of the sun during tests of seafinding ability by deviating from the shortest route to the water. Cutting off cues from close to the horizon disrupted orientation. Introduction of artificial cues elevated above the normal horizon into an otherwise uniform visual situation re-established orientation. The results suggest that any kind of visual stimulus has some effect on the seafinding orientation of hatchling turtles and that this orientation depends on a relatively uncomplicated type of tropotactic reaction.

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[N.C. State Mus. Natur. Hist., Raleigh.] Habitats, diet, reproduction, longevity and combat dance of *Sistrurus miliarius miliarius*.

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[Calif. State Coll., Fullerton.] Abstract: In the desert tortoise *Gopherus agassizi*, the egg nest is urinated upon by the female as an aid to nest

digging, repulsion of egg predators, camouflage of the egg nest, and as a compaction agent that makes nest excavation difficult. Experimental tests were run using zoo animals, and soil penetration and compaction tests were supportive of the above conclusions. No bacteriostatic agent was found in tortoise urine.

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[Univ. Central, Caracas, Venezuela.] Summary: Erythrocytes of *Tropidurus torquatus* (Sauria, Iguanidae) infected with *Plasmodium (Sauramoeba) tropiduri* show acid phosphatase activity in Golgi vesicles, multivesicular bodies, secondary lysosomes and autophagic vacuoles. The functional relations between these structures and exocytotic activity is discussed.

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[Inst. Zool., Acad. Sci. Ukrainian SSR, Kiev, USSR.]

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[Univ. Fla., Gainesville.] Notes on *Leptodactylus pentadactylus*, *L. poecilochilus*, *Smilisca phaeota*, *Phyllomedusa callidryas*, *Hyla ebraccata*, *Bufo marinus*, and *Prostherapis* sp.

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[Univ. São Paulo, São Paulo, Brazil.]

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[Oberlin Coll., Oberlin, Ohio.] Abstract: Cheloniid turtles swim by moving the blade of their pectoral flipper up and down along a line inclined from 40° to 70° from the horizontal plane. The leading edge of the blade is inclined anteroventrally on the downstroke and anterodorsally on the upstroke, and the tip of the blade usually inscribes a figure 8. The downstroke is the main propulsive stroke, but some propulsive components are generated on the upstroke. The blade, composed of the antebrachium and manus, is driven largely by movements of the humerus that include on the downstroke a retraction of 70°-80°, a 60°-70° rotation, and a 30°-50° adduction. A shift in the axis of the articular surface of the humeral head, relative to the axis of the shaft, enables a retraction of the humerus to bring about concurrently most of the adduction and much of the rotation observed. The crus and pes extend posteriorly beyond the edge of the shell close to the horizontal plane. They act as rudders and elevators, and aid in steering and changing depth.

Wassersug, Richard. ON THE COMPARATIVE PALATABILITY OF SOME DRY-SEASON TADPOLES FROM COSTA RICA. *Amer. Midland Natur.* 86(1): 101-109, 1 fig. July 1971. *WR 142: 112*
[Univ. Calif., Berkeley.] Abstract: Tadpoles of eight species of frog were tasted in a standardized procedure by 11 volunteers. The tadpoles were rated in their palatability from "tastes good" to "highly unpalatable." It is suggested that palatability in tadpoles may correlate inversely with vulnerability.

Webb, Grahame, and Harold Heatwole. PATTERNS OF HEAT DISTRIBUTION WITHIN THE BODIES OF SOME AUSTRALIAN PYTHONS. *Copeia* 1971(2): 209-220, 8 figs. 1 June 1971. *WR 142: 112*
[Univ. New England, Armidale, New South Wales, Australia.] *"Morelia spilotes* and *Liasis amethistinus."*

Whitaker, John O., Jr., and David C. Rubin. FOOD HABITS OF *PLETHODON JORDANI METCALFI* AND *PLETHODON JORDANI SHERMANI* FROM NORTH CAROLINA. *Herpetologica* 27(1): 81-86. Mar. 1971. *WR 142: 112*
[Ind. State Univ., Terre Haute.] Abstract: The stomach contents of 337 Metcalf's salamanders, *Plethodon jordani metcalfi*, and 435 red-legged salamanders, *Plethodon jordani shermani*, were examined. There was great similarity

in the foods utilized by the two. Ants were the most important food of both forms but were more important in *P. j. metoalfi*. Other prominent foods were spiders, insect larvae, springtails, millipedes, centipedes, mites and snails. A greater diversity of foods was eaten by *P. j. metoalfi* than by *P. j. shermani*. Smaller items such as ants, mites and springtails accounted for decreasing percentages of food by volume in the large size groups, and the reverse was true for some of the large items, especially millipedes and earthworms. There were no distinct seasonal changes in food habits.

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[54 Babybird Court, Baltimore, Md.]

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